SPECTRUM '82

Changing Channels for Tomorrow

...the book...

Westin Hotel
Edmonton, Alberta
March 24-26
1982

SPECTRUM '82

preface

In recent years an escalating number of voices have joined the ranks of futurists predicting rapid and profound changes throughout the world. Virtually all would agree with Margaret Mead's contention that the present is no longer an evolution of the past but an explosion of the future.

The response to this explosion must start with a discussion based upon the process of change itself. We as adult educators must shift our emphasis from content to process. We must ask the question: What do adult learners need to know or be able to do in order to interpret and proactively adapt to the coming changes?

Malcolm Knowles has stated that: .... "the half-life of current (adult education) practices is about a decade - that half of the practices become outdated over the course of ten years". Marilyn Ferguson implied that education progresses slowly "funeral by funeral".

It appears that we no longer have the reactive time frame of the past. We must choose to be our own children and thus be open to new thoughts. We believe that Spectrum '82 provided some valuable new thoughts..

In this printed conclusion to Spectrum '82, we have provided a representative pictorial and written record of the proceedings. We hope that it will serve to bring back many useful and pleasant memories.

The success of the conference owes much to the more than one hundred persons who contributed in various ways to the planning and presentation. Over 97% of the evaluations attested to the positive relevance of the program while 92% rated the quality of the ideas presented as very good or good.

On behalf of the organizing committee, I would like to express our appreciation to the Department of Advanced Education and to all the participants for providing the support and enthusiasm that characterized Spectrum '82.

Jim Berg

Chairman
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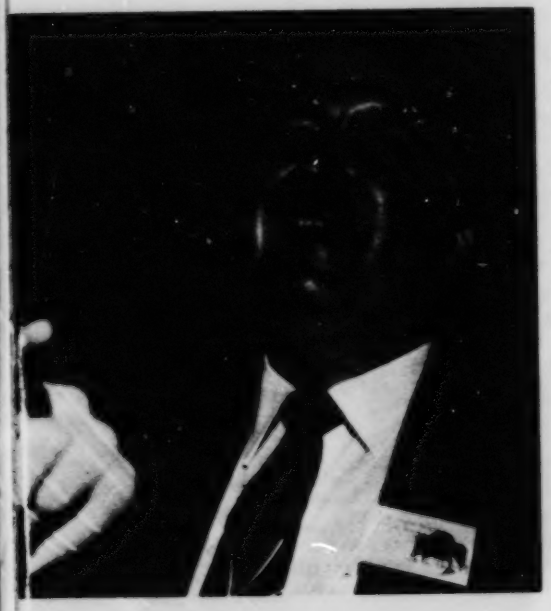

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Paidea in Adult Education: A Global Perspective

Transcribed with minor revisions from oral presentation at SPECTRUM '82.

Part of the context for understanding is the environment in which education is happening, and by education I mean that in broadest possible terms - education at all levels, in all aspects of society. I think there is plenty of evidence, if you know where to look for it, that certain crucial determinants may already have been established in terms of this new direction. We have been sold by our culture, by our schools, by our families, by history, for centuries and who knows maybe millenium - a set of values which is in the process of changing and I would like to talk briefly about those values too. First let me say in terms of the Aquarian Conspiracy, which is my term for the groups and individuals and networks of people working to bring about social change.

What I would like to say about the response to the Aquarian Conspiracy is not so much by way of saying, **"Isn't it a wonderful book? I want you to know that"** but rather, **"Isn't it astounding how many people seem to be sharing the same vision?"** Because one of the things I've discovered about the Aquarian Conspiracy is that it can only in a way speak to people about that which they already know. It taps something in their own experience. I don't know anyone who has said, **"I didn't believe any of it and I read your book and you convinced me."** It seems to be more that wherever it is people have some personal openness or some hope left. It touches that cord and that is what is to me really hopeful.

The book has been published in France. It was published again a month ago in Sweden. It is coming out in Germany. It has been published in Great Britain, and in Japan. It is coming out in the Netherlands and Brazil. It has been published in Argentina for the first Worldwide Spanish distribution. It has been translated into Esperanto by a lady in Vancouver and is being edited in Poland, she told me. It has been translated privately into Korean, and the chapters are being circulated by hand. I had a letter from the President of the Sociological Association of the Soviet Union, a fan letter, saying how keenly interested in the book he was. The leaders of the Solidarity Movement requested ten copies of the book from a German lady about six months ago. A woman in Phoenix gave me a Xerox of a letter that she had, of a letter she clearly wanted to keep for herself, with a very warm appreciative, thank you for the book, from Anwar Sadat.

I have had conversations about it, telephone calls from governors, from senators, from a White House Senior Policy Advisor. I have talked about the ideas to the World Business Council, to IBM, to the Digital Equipment Corporation, the American Hospital and the American Council of Life Insurance. Recently I talked to industrial relations managers in Vancouver, one of the best audiences I have ever talked to. There are Discussion groups all over creation who seem to be using the book. There are people in colleges and the person who handles secondary school book sales for Houghton Mifflan, the publishing parent company of J. P. Tarcher, my publisher, said that he was getting requests from a lot of secondary teachers for information about it. We created in fact a curriculum packet out of course outlines that people had from all over the country, where people had done courses including an honour seminar in chemistry and a physical education course.

People are really imaginative. They find a way to use the Aquarian Conspiracy. There have been discussion groups of prisoners, of elderly people, of Vista volunteers. Also the Medical School Faculty at the University of Colorado started a discussion group at a Presbyterian Church. What this says, and the messages

from the letters that I have gotten, and by now there are about three thousand letters, is that people carried this vision secretly somewhere inside them and they thought they were crazy. They really thought they were alone. But they thought maybe they had one or two friends who understood what they were talking about. They had no idea that there were groups, networks, organizations, and people in key places who shared the vision.

About two weeks ago I was in Washington and met with some government people. We were picked up by the US Army and taken to the Delta which is the army "think tank". I thought that I was dropping in to see Task Force Delta. I had heard about it and I had told the people who made arrangements that if it was possible for me to say something for ten or fifteen minutes that would be nice. I thought it would be fun to address them. When I got there I found out that the Dallas Cowboys football coach had cancelled out and they put me in as keynote speaker. These are senior army officers and some of the brightest people I have ever met, civilian consultants. There were about one hundred and ten people, most of them military, out of uniform. This think tank serves the army in an advisory capacity. They brainstorm, create proposals, ways of selling ideas to the chief of staff and the other top officials at the Pentagon. This particular conference was called "Leadership in the Army". The army people have been very much in the avante-garde in the terms of them trying to understand leadership and management. With some of the best thinking that goes on there, they are very quick to adapt. They had some really good ideas going around at this conference. First of all, I felt like I was going in to alien territory but one of the people who greeted me said, "**You have to understand, there are a lot of Aquarian Conspiracy groupies here.**" And indeed there were people coming out of the Task Force Delta, who had created workshops on the evolutionary person. How do we foster people's evolution and transformation? They had done a series of workshops through which they had put a hundred and eighty Generals. There were some really amazing things going on.

> . . . evidence that there is a . . .
> change of temper, a change of mood that is happening.

I met the Assistant Deputy Secretary of Defense, who is a former Miss West Virginia, a psychologist, and a terrific lady. She was saying that the week before she took her job at the Pentagon (she was a Reagan appointee) she had a certain amount of anxiety about it because a part of her, (she had been a consultant to the military) had resisted becoming part of the defense department. The week before she went in, she spent at a Soofie Holistic Health Retreat. The night before she started her first day at the Pentagon, she participated in a sweat lodge ceremony with some American Indian healers. She told me she had introduced the Aquarian Conspiracy into Panama when she was there two years ago and in fact had initiated some people who began a discussion group.

Every couple of days either something comes up that I have trouble integrating, but this session with the Task Force was particularly hard. They had some people who came in with a little device, by the way it is a fascinating thing, called a "consensor". I do not know if any of you have ever heard of this but it is a way that you can vote - that your vote is weighed. The people who invented it had participated in a presidential election in which they did not want to vote for either candidate. I am sure we have all had the experience of voting, and thinking, "**I hope they don't think this is a mandate because I am choosing the lesser of two evils.**" So they invented this device. The fellow who came to demonstrate the device had come up to me to say that he had been influenced by the newsletters and so on. Again I was surprised. But I decided on a mad impulse in the course of the keynote address to start talking to the Army about peace. I do not know what got into me but I said to them that there seemed to be something going on like the Peace Movement had become the Peace Explosion.
It was really incredible. All of these little groups and organizations becoming involved in specialized organizations - you know "Lawyers for peace", "High-tech workers for peace", and "Physicians for social responsibility". People were coming up with symbolic things and wanting to hold hands around a lake and wear things and whatever. It was this huge grass roots kind of thing that was taking hold and had the establishment people involved. And then we know in Portland, Oregon - Joel Shots and his wife Diane Shots, an artist, were responsible for creating an energy poster, an alternative energy poster that they managed to get sponsored by the Department of Energy, the National Council of Churches, the American Legion, and Pacific Gas and Electric. I mean it was really quite amazing, especially since this particular poster showed a broken nuclear plant and oil refineries spewing oil. But it was like somehow they kept pulling off these kind of miracles. Joel and Diane were working on a peace poster. What a number of people have been saying lately is, "**We don't know what peace looks like. What would peace look like.**" It is not just the absense of war any more than health is the absense of disease. In the midst of Joel and Diane working on the peace poster trying to visualize

what peace would look like, they got a call from a high official of the United States, a mutual friend of ours who said, **"Hang in there, I think I'm going to get the Chinese and the Russians to co-sponsor the poster."**

It has been this kind of thing going on that has made us feel there was some change in mood. There was some change in climate and I decided to just say a few things about this to Task Force Delta. I said, **"You know when I go around the country talking about transformation and when I tell these audiences that there are people in the military and networks of people who are very interested in social transformation and in fact even in transforming the military, they find it hard to believe."**

I said, **"You may be surprised but most people, at least a great many people outside the military think the military wants war"**. They looked surprised because they did not know this. They really did not. I mean this is the kind of breakdown in communications that we have between institutions, between the social groups.

I said, **"It's interesting because even though doctors deal with disease and pathology and even death, we expect them to be involved in health promotion and life promotion. What would happen if, after all this is a conference called Leadership in the Army, what if it were Leadership by the Army? What if in fact you became involved in peace promotion? If you took the leadership in that?"**

I said, **"You have the expertise. You know more about war and what it's like than anyone. You have more to lose than anyone, you have people within the military with the psychological expertise, the understanding of, and the intelligence about the way the opposition thinks. You have people who work on strategies for conflict resolution. What would happen if you actually took the leadership in this?"** This by the way happened in the Israeli Army.

I want you to know that I got a standing ovation from Task Force Delta. Not everybody there agreed. There was Higgenbottom, who said, **"We can't do that because the constitution forbids us to mingle in civilian matters and peace is a civilian matter"**. But I think the fact that there was this excitement, this enthusiastic response, indicated that people are ready to consider almost anything. I mean it was just one of the officers who came up and said **"You know you took me by surprise."** He said, **"I reeled when I heard that."** I could feel a lot of surprise on the faces. And then I thought, **"Why not?"** Two of the officers started talking to me afterward about War, and how much they hated war and what it feels like to lose your closest friends. They talked about "All quiet on the Western Front" and "The Red Badge of Courage", as descriptions of the personal traumatic experiences of war. We do not think of people in the military that way. Somehow we think if they went into it, they must want to fight.

I went back to my room with a group of the people from the meeting and then a little later two or three others came. I guess three people came in who had been in the cocktail lounge where everybody had gone after the evening talk and one said **"Well it's done."** I said, **"What do you mean it's done."** He said **"Launched"**. And so I figured things do definitely get launched in cocktail lounges.

To me this is just a kind of growing evidence that in fact there is a worldwide, not universal, not 51%, but a change of temper, a change of mood that is happening. It is more like lights going on in different places. Has the movie "My Dinner with Andre" been playing here in town anywhere? I would very much recommend this film. It has been a sleeper. It seems to just be going crazy by word of mouth. It is called "My Dinner with Andre". It is about two men having a conversation, a theatrical director and a playwright. It is a vision of the world and life and what it all means, trying urgently to communicate that to a friend. And the friend is confused, attracted, resistant, comprehending, and obtuse. It is just a really interesting movie and you might enjoy it.

The set of values that we have brought into, and gone after for most of our lives, comes from our sense that we somehow have to protect ourselves from a hostile universe. Do you know that psychological studies show that most people think they are more honest, more caring, and more responsible than most people. On the night that we used the consensor at the army, the participants could vote both on how candid they thought they had been in the meetings and how candid they thought everybody else was. Everybody who voted thought that he or she was more candid than other people. This is really typical, like the reason that somehow we think we are more honest, more caring, and more responsible than other people.

The reason it does not get reflected in our lives is because of our perception that it is a jungle out there. We are this great self-fulfilling prophecy of a jungle because of our expectations of each other. Carried to the ultimate, it translates to, "We wouldn't bomb them, but they would bomb us." Given an understanding that the world is not all that safe a place, there are many many different things that happen to us in our early lives and in our growing up process which makes us feel that what we need is safety. So we get conditioned into what I call the

protection values. What happens is when people go through a process of personal transformation they move toward another set of values. Millions of people are now beginning to embrace this other set of values.

A recent study, that was done by SRI (Stanford Research Institute) indicated that the fastest growing group of consumers are the people they call the "inner directed". These are people who are not particularly influenced by what they are told they should have, but by values they care about, values generated from within. Let me give you a sense of what these contrasting values are. Safety (to not take chances, to be protected) is one of the values of the protection paradigm.

I was trying to understand what was at the heart of the conflicts within so many relationships that I could see. I began to recognize the conflicts, although people argued at the level of behaviour, "Why does he do this? Why does he do that?" the real conflicts are at the level of values. That is why even when people try to get each other to change their behaviour it does not last for long, because people will always revert to their values.

When somebody has begun really opening up, questioning, and going through a process of personal transformation, the person will have a tendency to move into the set of values that I call the "growth values". You can see that these values are not easily compromised, that there is no mid-way point between safety on the one hand, and the paradigm of trust values or growth values, (freedom - spontaneity). You cannot say we are going to be half safe and half free. We are going to be half risking and half safe. When people in a relationship or people in a work environment who have to work with each other, have contrasting values, it is very hard to find a point of true compromise. In the protection values, comfort is a very important value which can be contrasted with meaning. In order to achieve meaning and understanding we often have to go through some pain, some conflict and some discomfort, because life is always changing. So our old explanations are not going to keep working.

Remember I was talking yesterday about the paradigm shift and how uncomfortable it is to have to deal with these little contradictions and anomalies that come up. And yet this is the only way that we can keep getting clearer until the next set of contradictions come up. If we want to stay comfortable, what we will do is to keep closing down more and more of our consciousness. It is as if we started out with a twenty-two room mansion and every time one of the rooms got a problem in it - something that had to be resolved and it was going to be hard to handle, we closed the door and locked it. Soon we would end up in the coat closet under the coats wondering why it was so crowded - because it would be all there was left. The human brain has the capacity to repress and close off any information it does not want to deal with, at least it closes it out of our consciousness. What happens is that all that unresolved stuff goes into unconscious suffering. We do have ways of keeping it

> We just do not know what people are capable of if they are properly motivated

out of our consciousness. These two contrasting values then are comfort - which is avoiding pain or anything that threatens our belief system, and in contrast the search for meaning - a willingness to confront life as it is and to live with ambiguity.

Again in the left hand column (no political implications on either hand) is the value of image. You could also think of it as status or role, the idea of looking good. We have been taught that it is important to look good to other people so that they will be impressed. This is who and what we get to be in our lives, by how good we look to other people. Notice that the protection values mainly have to do with externals, for example, "I'm threatened by other people", "How do I look to other people?" and so on. The contrast with image or status here would be authenticity. Authenticity is when we really are meeting and dealing with our own expectations and are willing to diverge from cultural norms, if this seems to be true to who we are.

The fourth of these items and of these pairs would be self-control as contrasted with self-knowledge. We have a real anxiety about the protection value, which is to make sure our own feelings do not get out of hand. You can always keep yourself somehow managed and controlled. An interesting question arises though, because who is controlling whom. Who is self-controlling the self? Self-knowledge, on the other hand, allows us to understand all aspects of ourselves. If there is control it is done with full understanding rather than hiding and repressing things.

The next pair would be ego defenses and vulnerability. We have been taught that it is somehow good and in fact even our psychology tells us to have a well defended ego, to be able to protect our personna in some way.

However, in the process of growing you have to be vulnerable. You have to be willing to be open to other peoples' feedback, to be open to your own feedback to yourself, and so on.

The next pair would be permanence and potential. Permanence is trying to lock into things, trying to hold them in one place, whether it is a belief system or a view of reality. Potential is kind of interesting because all of the things that are in this left hand column do not ultimately work. We go after them as rewards and protections to make ourselves feel better but they do not really work because obviously we cannot hold on to things. Nothing is permanent. When people move into the paradigm of growth values, however, they see that there is always potential. We cannot hold on to things. People come and go in our lives, our children grow up, our beliefs have to change; but there is always potential. There is always something new that is happening that could be wonderful. Therefore, there is not that panic about holding on to the past.

Another contrasting pair of values would be information and insight. Having the right answers is a value we get largely from our educational system. The belief that you will be safe if you have all the answers obviously is a futile way of being safe, because the information keeps changing, particularly now. What good would it have done you to memorize geography when you were a child when all the boundaries keep changing. We had the idea, somehow, for too long that there was a body of knowledge we could get a handle on. Yet we can see that we are living in times of such rapid movement, such mobility, such change, such rapidly advancing technology, and international and social change, that there is no way we can get all the answers. Insight or learning how to learn, acquiring the ability to keep moving on our own, however, is an appropriate tool and something that is more valuable to us in the long run than the information could ever be.

Another pair would be adjustment and aspiration. The adjustment is the kind of "you". When the Aquarian Conspiracy came out it was reviewed even before publication, in "Psychology Today", by a Freudian Marxist history professor at Stanford, named Paul Robinson. He hated it. He said it was dangerous, mindless, and thoughtless. The worst thing about it was that it would make people forget their limits. Adjustment is the idea that you should cope. Women have been suddenly rebelling in the last twenty years the fact that whenever they go to therapists they are always told to adjust. They are told to adjust and to fit into the roles that they have been assigned, instead of coping with their own need to grow. Similarly we often say to people, **"Oh, you are this type or you are that type or obviously you are good at this or you are bad at that. Adjust! Stay in your place!"**

Aspiration says **"Who knows what we can do? Human beings build cathedrals. Human beings will break the four minute mile barrier. Human beings will fly to the moon. Who knows what we can do?"** I remember when my children were little, I have three kids, my former husband was always reassessing what they were good at and what they were bad at. Even now I am dealing with some of the fruits of that, such as the sibling rivalry between my two daughters. It was always this one is prettier, that one is smarter, this one is more graceful, that one is clumsy. From time to time I would think, you know this is the little child who moves like a gazelle even from when she first started walking, and this is the one who clumps around. I found though, the one who clumps around, when she wanted to become a gymnast, taught herself to be graceful. I taught all of them to read when they were about three. The one who had the most problem learning to read who would have been dyslexiac, I think, became a prodigious reader. The one who, when he first started playing the piano was not coordinated enough to lift one finger up so another one could go down, became interested in Scott Joplin and learned to play the original Scott Joplin. All of my notions in fact, even of natural aptitudes had to be adjusted. We just do not know what people are capable of if they are properly motivated.

The next pair of contrasting values would be power over others as contrasted with power with others. This is pretty straightforward. This is closely related to feeling superior to others as contrasted with feelings connected with others. These are both very similar.

"Come to the edge," he said
They came.
He pushed them
and they flew.

The last one I have here is freedom from responsibility and freedom in responsibility. There is a very interesting model of human growth and neurosis that comes from Karen Horneye who was a psycho-analyst who died in the 1950's. She wrote a book called "Neurosis in Human Growth" that came out about 1915, and in the 30's wrote a book called "The Neurotic Personality in Our Time".

She had some very valuable insights into what stunts our growth. There are only a couple of points, given this perspective in time and what we understand now of human dynamics, on which I disagree with her.

One is that she treated neurotics as if they were somehow separate people. Here and there she would acknowledge that there is a continuum. We all have neurosis, some distortions of our world view. The question is, do you have the neurosis or does neurosis have you? Most of her clients were people who were greatly affected by their neuroses, so this gave her the real pure essence of neurosis to look at. She developed a view of how this aspect of the self evolves. She said that when we are little kids we are not acceptable, fully acceptable, in our environment. Obviously there is a big variety in how acceptable or unacceptable we are, but most of us find that we are not enough. Even if we are acceptable enough to our parents, we are not acceptable enough to the rest of society. We are not acceptable enough to our schools, other people or peers, so we begin shaping and/or inventing another self. She called this new self, based on what we think other people want of us, the neurotic self.

This is the mode of getting safe. This neurotic self, we soon think is us. The neurotic self has different strategies of providing safety for itself. For some people the strategy is withdrawal: "I don't need anyone, I am self-sufficient." For some people it is clinging: "If I can only get enough love I'll be okay." There are many, many things. For some people it is power: "If I can get enough power I will be okay." Some people feel that society is going to reject them or abandon them. Other people feel that they are going to be attacked. Others feel that they are going to be suffocated. There are many different things that cause us to come up with our neurotic strategies. So there you are creating this neurotic self and your standards for the neurotic self are insane. They are so high because you have to be absolutely perfect. You have to live up to that. Around this neurotic self, we construct what she calls "A Neurotic Pride System". The Neurotic Pride System makes us very touchy about those things we have decided we wish to be. We also have a lot of contempt for ourselves, secretly, because we know we are not being that. We have created this incredible double bind for ourselves. We have to be something but there is no way we can live up to it. We think this collection of constructs and opinions is ourselves.

When people go in for therapy, or when they start some kind of transformational process, I call this psycho-technologies. This can be meditation, or EST, or running, or bio-feedback, or self-hypnosis, or body work, or whatever. We do not take ourselves into that process or into a therapist to get rid of our neurosis. We go in there to get our neurosis tuned up, because it is not working right any more. Out of the neurosis we come upon conflicts that we do not know how to resolve. This is what she calls the "neurotic conflicts". The neurotic conflicts are basically the things that bring people into therapy.

An example of a neurotic conflict is the man who wants to be both a perfect physician and the perfect husband and father. His family wants to move to the country. If the family does this, he cannot continue the specialized education he wants to continue. Another example would be a woman who has to be both a perfect wife and a perfect mother, but her husband is an alcoholic who abuses her in front of the children, so she comes in trying to get this neurotic conflict resolved. The job of the therapist or the facilitator, or the teacher, or even the job of the technique, if it is a technique the person is using, is to undermine the crazy assumptions of the neurosis.

If the therapist manages to undermine the neurosis for long enough, the real self, which has been bound and gagged, gets stronger and stronger and stronger. Imagine that a person is in therapy or in some kind of transformational process other than therapy. They may go along for some time feeling that they are getting more peace of mind, or more clarity or more energy. When all of a sudden it all gets so much worse, they cannot believe it. This seems to be a very typical pattern. The reason it gets worse, is that suddenly the field of the battle, the theatre of war, has shifted. It is no longer the neurotic conflict. It is now the final battle; like "Lord of the Rings" or something. What has happened is that the battle is between the real self and the neurotic self.

The real self has become stronger. The person's real agenda, this real deep natural need for growth, their secret ambitions, visions and dreams that have been long buried and the energy of the real self are becoming liberated. The neurotic self is losing its ability to control this other energy that is coming up from the real self. The neurotic self becomes panicky. It thinks it is going to die, and it is. We think we are our opinions. If I do not believe that any more, who am I? There is this confrontation between the real self and the neurotic self which feels like death. That is a very crucial point in the personal transformational process that people go through.

This is why the role of the educator is often to create stress and challenge. Christa Mertie said one time, "**True compassion is ruthless**". I think one of the limiting assumptions of humanistic educators for a long time was the idea that you do not ever push anybody. You do not cause them any stress or pain. There was the

illusion that somehow people were just going to unfold organically, that nothing was going to hurt and in fact I think that is not true. I have been involved in alternative education.My children were in one of the first programs. A community group of parents, teachers and students convinced the Los Angeles school district in about 1971 or '72 to start the first public alternative school, kindergarten through grade twelve. I was part of that group. I remember that there were some people in the group who did not want their kids to be pushed or challenged in any way because somehow that was not loving. That was not caring. I think that was a misunderstanding of human growth.

I am sure all of you who are actively involved in education know that usually people will come to a place in their learning where they need to go through something difficult. They have plateaued and they need to go through something difficult. They do not think they can do it. If you care about them you will push them through. You will trick them through. You will tempt them through. There is a little bit of truth from one of the plays by playwright, Appollinaire. "**Come to the edge**" he said. They said, "**We are afraid.**" "**Come to the edge,**" he said again. They said, "**We are afraid.**" "**Come to the edge,**" he said. They came. He pushed them and they flew. I think this is an important part of the role of the educator, to know when to challenge the neurotic self, when to undermine the assumptions of the limitations. We need to teach people how to go through discomfort. We really need to teach people how to go through pain. We need to teach people that freedom is on the other side. I think that has a lot to do with teaching people how to think and organize around their thoughts.

There was a study that was done at the University of Chicago about two years ago, by Reed Larson and Meholly Sicshink Meholly. They studied high school juniors at two academic high schools in Chicago. Every year junior students at these two schools had to write the "Junior Theme", a ten-thousand word essay or theme. It was considered the nemisis of the junior year. It was a real scary thing. The researchers studied the students, the instructors, and how they were instructed. They followed the students as they did their research and then did an overall follow-up. What they found was that basically these kids could not handle it. They freaked out. Nobody had ever taught them how to have an original idea and organize around it. Some of them found they could not work at all. Others tried to include everything under the sun and did not know how to organize it.
The point that the researchers, and you might say critics, were making is that our educational system does not anywhere along the line teach people how to organize and innovate. If they do, they only know it intuitively. They never noticed that they teach it. This has not been part of our system, yet here we are at a time when we have a desperate need to be able to innovate.
Individually we have a desperate need to know how to change paradigms, how to go through new experiences, how to handle the discomfort and come out the other side.

> ❝ . . . there is a lot we need to understand and integrate into education: ❞

There was a study that was done at the University of Chicago, one of the co-authors was also Meholly Sicshink Meholly and the other was Jacob Getzels , who was supposedly an authority on creative thinking. Getzels had had a premise for many years and this study was designed to investigate it. His premise was that the heart of the creative process is not problem solving, it is problem finding. It is knowing what the real problem is. What is the real question? See if we can get the real question. The answers may not be so difficult. The reason we are usually stuck and we keep asking the question over and over and not getting the answers is because it is the wrong question.
An example would be in the United States. They have been saying over the years, "**How are we going to handle this escalating crisis in medical care and provide health care to the people of the country, when we cannot afford a national system because of the cost of pharmaceuticals, doctors and hospitals?**" They keep asking that question but in fact nobody is asking, What is health? We are equating health automatically with pills and surgery and hospitals. We are not asking the right question. How many educators want to know how to fix up the curriculum without ever asking, "**What is learning? How do people learn?**" So we go out there and focus on the content instead of realizing that what we need is new contexts for what we are doing.

In this study at the University of Chicago, they decided to try to find the heart of the essence of creativity by studying fine artists as pure examples of creativity. The researchers had thirty artists come in, one at a time, into a studio, and do a still life. The artist would walk in. There would be a table with twenty-seven objects on it and the artist would choose those objects to do a still life. The artist would be observed to see how many objects he handled, how long it took him to get started, and then the

work would be photographed while it was in process. At the end they were interviewed and given a number of tests. All of the drawings were hung in a gallery and were judged by artists who were also critics. They had served on art juries. They wanted to find out what is the difference between successful and unsuccessful artists. Is there a difference that can be actually teased out? After the works were judged, they began questioning the successful and the unsuccessful artists. A follow-up study seven years later showed that the successful artists, as judged by that jury, were the only ones still working as fine artists, so it was pretty predictive.

> It was like yam washing got into monkey consciousness.

They found a number of interesting things. One thing was that success was negatively correlated with academic grades. When the unsuccessful artists were asked why they paint, sculpt or draw, their answers were quite shallow. "**I enjoy making beautiful pictures, I like seeing the colours, I like creating harmonies, I enjoy making a surprising effect in the picture.**" They always talked in terms of product. When the successful artists were asked the same question the answers were things like, "**I'm trying to understand myself. I'm trying to understand life or death or relationships**". For them it was an intense personal process, to be involved in their art. It was not to make a thing. The irony is that the person who is engaged in a high quality process makes a better product than the person who aims for the product.

I think this is a very important concept for educators to know. It is the moment, it is the process, it is the quality of attention itself that is important. The outcome will follow naturally. It is like you do not really need to know in terms of where you are as educators; when you have the context right for yourself, you do not need to know what the content is going to be. The content will emerge naturally.

The research group also noticed that when they asked the unsuccessful artists whether their picture could be changed without hurting it, they tended to say no. The successful artists said yes. The successful artists knew it was part of the process. They knew it could have gone any number of different directions. One of the things that had puzzled them was that the work of the successful artists did not emerge until almost the last minute, and the researchers were interested in that. They noticed that the successful artists had delayed. The most significant difference between the successful and unsuccessful ones, was the successful artist had the longest delay of closure before they started to work. The researchers thought maybe because they took a long time before they started, they knew exactly what they were going to do. They noticed the successful artists would work on the canvas or the sketch pad, first up in one corner, then maybe in the middle, and then somewhere else. It was kind of a puzzling process. The researchers thought well, maybe they had their picture so clearly in mind that they were able to do that. That is why they went through all these intermediate stages and suddenly it all came together. When they talked to the successful artists they found that they had no idea how it was going to come out. They were as surprised as anybody when it all came together. What they had to conclude was, that the delay in closure had allowed the question to be posed at an unconscious level. They were working at an unconscious level and when they started to work they were working intuitively.

To me this is very interesting because I think a lot of people, intuitive people, who are the artists of their own lives, live their lives that way. Other people may say to them, "**What, you quit a good job, why are you moving to Edmonton? Why are you leaving that relationship?**" The individual may not be able to articulate why they are doing what they are doing. They just have a strong feeling that this is the next move, just as these artists did.

I think that there is a lot that we need to understand and integrate into education; what deep level learning is all about, what creativity and innovation is all about. We have confined our ideas of creativity to the arts. It has been so limiting. All our breakthrough scientists are artists. In fact one study that was done on top scientists, shows that they were more like artists than they were like other scientists. All people who lead really successful, interesting, rewarding lives are functioning like artists.

I think this is a really important part of what we need to get into the educational system. We cannot do it unless we get it into our own lives. All we can teach is what we know. You know I am talking about what is in the curriculum. The teacher and the people who design curriculum have to embody what it is they are teaching, particularly if they are working with adults, because they are looking to them. They are seeing who you are. What you model is such an important part of what they get. If you are open and excited, in love with life, open to change, and willing to go through conflict and contradiction to get new understandings, that is what you are modelling for them. I think this is true no matter

what kind of teaching you are doing. I really do not make distinctions between academic teaching and vocational teaching. It is all learning. It is what we do when we discover our power in or out of the political system. It is all the same.

I was talking yesterday about how new scientific paradigms or theories are introduced, how they are resisted by scientists, and eventually how they get accepted. I would like to tell you about one paradigm that is intriguing. It suggested that this pattern may be changing. Last summer there was an article published in a British journal called "New Scientist", a highly respected and frequently conservative journal. In the editorial pages they said "**This essay challenges the entire foundation of the scientific method. You may think we are bonkers.**" They actually said "**bonkers**". Remember though, that all new paradigms seem bizarre and outrageous at first.

I thought, well they are finally saying it. They are finally getting it, fifteen years after Thomas Kunes book. The man is a highly respected scientist - very distinguished. There is nothing in the way he presents this that is not good science. His theory is that the universe does not so much have laws as habits. Everything that happens, happens not because it is the universal law but because an invisible force field was set up by the first event. This is called the "Hypothesis of causative formation". It says that when something happens it makes a blueprint or a pattern that transcends time and space, that makes other events tend to happen in the same way.

Rupert Sheldrake, a British plant physiologist introduced the idea. He has written a book called "The New Science of Life" which was published in England and which my publisher, J. P. Tarcher has just issued in the United States. Sheldrake says there are a lot of anomalies that we have not accounted for in science. Again, here is somebody who is willing to look at these puzzles that were being swept under the rug. For example, when people are creating a new organic compound they are synthesizing it. It is very tricky to get the first crystal of that compound, but after that it gets easier and easier. Soon in laboratories all over the world everybody can do it. It has become easy. Nobody knew quite how to account for this, so the explanation they came up with (and this is how you can tell when a paradigm is getting tired because the explanations get so far-fetched) was that the scientists from the original laboratories had gotten some of the seed crystals in their beards and on their clothing and that when they visited other laboratories somehow the seed crystals had fallen out and gotten into the atmosphere and facilitated the new crystals.

There were a series of experiments that were done at Harvard in the 1920's by a psychologist named McDougal. McDougal was interested in teaching, and he created this water maze for the mice. To his surprise every generation of mice got smarter. This just did not make sense. A couple of other researchers who had gotten interested in McDougal's findings said they would try to replicate the experiment to see whether in fact, this was the case. The problem was nobody could do the experiment because by now all mice knew the water maze. Some of them ran it the first time. It was as if it had gotten into mouse consciousness.

There is another story, which Sheldrake tells, which is not official literature but in fact it has been talked about a lot: "The Hundredth Monkey". There were anthropologists, people who observe animal behaviour in the wild, who were studying colonies of monkeys on some islands off the coast of Japan. These monkeys had been transplanted to the island. They were being observed because the anthropologists wanted to see how they coped. It was not a familiar environment to the monkeys. The food that had been planted for them was yams. The monkeys would dig up the yams and eat them, sand and all, which could not have been too pleasant. One day a young female monkey named Emoj went down to the ocean and rinsed her yam off. The next day Emo's mother and father did the same thing, then some of her playmates, and a few days later more monkeys, until one day the hundredth monkey washed a yam. Suddenly all of the monkeys on the island were yam washers. On the same day that behaviour spread to the other islands. It was like yam washing got into monkey consciousness.

According to Sheldrake's theory everything that happens, every behaviour, every action, creates this field and then it becomes present to members of the same species, people in the same genetic lineage, or people doing the same thing. It is just there and it is available. The collective consciousness or collective unconsciousness in the young is the sum total of all of these fields. He calls them "morphagenetic fields". In a special issue of "Brainmine Bulletin", we called them "emfields". We are a collection of not only our own fields of past behaviour, which is a lot of what habit and learning are, but also all of human-kind is available to us. This may in fact account for a phenomenon that has been described in various ways. By getting the questioning, chattering, linear consciousness out of the way you can perform feats that you had no idea you could perform.

Many of you know the inner game of tennis - the inner game of skiing. I suspect that what happens is that when we get out of our own way we tap into the fields of everybody who ever knew that.

One of the things Shelldrake says is that we do not even understand the genetic material, the DNA, correctly. We think that genetic material causes people, or species, or whatever. He said we are probably comparable to primitive people looking at a television set. They see the people on the television set, they first think that the people are actually in the set. Then they would develop a more sophisticated hypothesis which is just what we did. They would decide the people are in the transistors, that if you fiddle with the transistors you ruin the people. They would not understand that there is this invisible source of information that is using and feeding through the transistors. In his view it is the morphagenetic field that feeds through the genetic material. This is an outrageous idea.

There was a cartoon that ran in the "New Scientist" in subsequent weeks, of the judge handing down a brief that said Shelldrake, and the verdict was "true but insane". What was interesting to me is what happened in response to that. New Scientist had many letters of praise from readers thanking the magazine for having the courage to publish the theory. "Nature Magazine", which is a rival scientific publication, published an editorial called "Candidate for Burning", stating that if any books should be burned, this book should be on the list. They were inundated by indignant readers who said this was very unscientific of them. The Nobel Laureate Physicist, Brian Josephson, in fact wrote and said that there was nothing wrong with Shelldrake's theory. It was perfectly good science. The controversy sold out several printings of the book. Let us pretend that he is right. There are these emfields of past experience that are available to all of us. We have those collective memories let us say, that are part of us: our inhumanity to each other, starving to death, of a whole history of human suffering, conflict, and competition. No wonder we frequently feel despair. No wonder we feel suspicious when somebody offers us an optimistic vision.

Consider also that for the last decade and a half, millions of people have in fact, been creating another emfield. They have been putting their energy into and seeding a vision of a different kind of society; a world without passports, a world without hunger, a world of cooperation, community and humane education, humane health care, different kinds of relationships that people have been envisioning. They have been meditating on this. They have been writing about it, talking about it, sending about it, and many many people have been living it. This creates something that other people can tap into. I think that the phenomenon that I am seeking in response to the book of lectures about the Aquarian Conspiracy, Frankfurt, Cape Town, and Paris, and people writing from all over the world - is not just because information is spreading, it is because there is a new level of consciousness that people are tapping into.

Ross Engrossie, who is somewhere high up in what used to be called the Esta-Organization, said last summer when we were in Vancouver on a panel together, that he had concluded that this was not a cultural phenomenon but a humane phenomenon. If that were the case it had to be happening all over the world. For that reason he had travelled twice to the Soviet Union and to the eastern block countries. He said it is true that a vision is popping up everywhere. It is a wonderfully exciting idea that we can, in fact, be creating a new blueprint for human life.

I was recently talking at a benefit in Los Angeles. It had to do with that movie "My Dinner with Andre". A man came up to me afterward and said, "**You didn't finish saying it.**" I questioned what he meant. He said, "**Well, you were building up to something and building up and I thought you were going to say it.**" I said, "**So tell me what it is.**" And he said, "**Well, you were talking about the neurotic personality. You were talking about how we go through all of this and we build up this artificial neurotic self and then there is the real self. The real self can get stronger. You were talking about everything that is happening all over the world and the peace movement and so on and so forth. I thought you were going to say that the planet is doing that.**"

Collectively we are moving from that vision of what people are: that we must always have war, we must always be in conflict to a vision of human beings as potentially cooperative and caring in community and relationship. It is like we have challenged the old assumptions, and now that we are seeing on the planet is that final inner conflict, which Karen Horneye called the central inner conflict or the final inner conflict. It is no longer the neurotic conflicts between people and families, the Hatfields and the McCoys, the tribes and the nations - but it is between two visions of who we are.

When I began to get what he was saying, I was really excited about it, and suggested that he should start talking about it or writing about it. He said, "**I'm a musician, you are going to have to do it.**"

I mentioned yesterday that Thomas Kunes said that it takes the dying off of the old generations before we can move into a new paradigm. Remember the line about science progressing funeral by funeral. I do not think that we want to do that. I do not think we want to wait for another generation to have community, to have alternate birth centers, a sense of personal powers, creativity and connection. We do not have to wait. We can do it if we choose to be our own children. □

ROY BONISTEEL

People's Needs vs. the Things Mystique

There will be a lot of talk at this conference about things - things of the future that will make our jobs easier, more exciting and more complex.
You'll be hearing about silicon chips that can store hundreds of thousands of bits of information. You'll hear about computers for the home that will spew out the news, do your grocery shopping, get dinner and quite likely change the baby.

You'll hear about robots that will do most of your work and replace your fellow humans as your partners and associates.

Many of these things will indeed make your lot an easier one- for others they will cause worry and stress, which is something else you'll likely hear a lot about at this conference. Change bothers a lot of people. A psychiatrist friend of mine claims that as God kicked the first couple out of the Garden of Eden, Adam turned to Eve and said - **"My dear, we live in a world of transition."**

The reason why "things" are enjoying such a good press these days is because they are becoming perfect. Scientists talk of building a "fool-proof" technology. What they really mean is a technology "free of fools." And the fools in this case happen to be human beings. You can depend on a machine. You can't depend on human beings. They are too fallible, too unreliable.

We have always taken comfort in the old cliche that a computer is only as good as the person who runs it. But today scientists talk assuredly about "artificial intelligence". This simply means a machine that can think. A machine that can do things far beyond what is programmed into it, that can analyze data and information in a way that wasn't anticipated. A number of computer scientists now say there is nothing magical about the human brain. They claim **"It is just a computer made of meat."**

As scientists talk more and more of "machine intelligence" and describe machines making and running machines and conferring with other machines, thinking thoughts that humans can't comprehend, I find myself becoming more and more an appreciable fan of error. Bank tellers are puzzled lately by my happy, smug smile when they tell me the computer has screwed up my savings balance. Fellow travellers stranded in long line-ups at airline counters are startled as I "whistle a happy tune" following the announcement that the computer has broken down.

I realize this is merely a defence mechanism I employ, but in a world of sterile flawlessness I can't help but give three cheers for imperfection.

In that regard I wouldn't make a very good teacher. An A + doesn't thrill me at all. (As the saying goes) **"So tell me why is it true - that I get a kick out of you."** Because you are imperfect. In other words you're a human being. And today it is very important that we remain so.

I'm very pleased to be a part of this particular convention because I am interested in adult education and I do like your topic Changing Channels for Tomorrow. It suggests that you are going to do something. I'm tired of going to conferences that all start with the word "Cope" - coping with this or coping with that; coping with the '80's, coping with teenagers,coping with old age; how to cope with unemployment. The theory seems to be that if you change your ways, you can cope with an unchanging environment.

Whenever I suggest to teachers, for example, that perhaps our schools put too much emphasis on competition as a means of teaching, they invariably respond, **"But you don't understand, Mr. Bonisteel. What we are doing is molding the child in order that he can cope with society later on. We mold people to cope with society."** I reject both of these ideas. First, I don't like the thought of anybody being molded. I don't want a child of mine to be molded. I don't want to be molded

to fit into anything. And secondly, why molded to cope? To cope is to cop out. Surely, we are on this earth to do more than just cope. Is it not possible that we go to school to learn in order to expand our experiences, grow in wisdom, not to cope, but to change our society? Of course we can.

One imperative for education today is basically to understand what is happening in our society and what it is doing to us. An understanding of what science is doing and what it is doing to us, and how we can understand it. I also feel, though, that there are some fundamental tenets that are being buffeted and shaken today in our society. Attitudes that humanity has shared for thousands of years are being called into question. Education certainly has a part to play in this. Too many people feel that education is to teach skills, to learn techniques, to fit ourselves for employment, but this is only part, and I might suggest even a small part.

> The principle that every Canadian is entitled to an education has become confused . . .

I think that the United Nations Education Manifesto, which was issued a few years ago by UNESCO, presents the finest definition of what education should be. It said, "**Education must develop the spirit of the human being, because he lives in a world steeped in science. Whether he is an automated factory worker, or a farmer caught in vertical integration. Education needs to cultivate his creativity, because stifling it is the cause of much of the world's malaise. Education must prepare a man who is socially committed, democratic, and internationally minded, because this is our one guarantee of peace. Man must be made to wonder, to doubt, to appreciate beauty, to master his own self. And finally, the physical, intellectual, emotional and ethical integration of the individual into a complete person is a broad definition of the fundamental aims of education**". It seems to me that this kind of understanding about education deals with persons as human beings. It fulfils the hopes and dreams of parents. And it certainly holds a torch high over the dedication of teachers.

Education is being knocked a lot these days. By government, by university pundits, by parent groups, by the media. Surveys are constantly being done to prove that students don't know the names of our political leaders, Canadian authors, or the capitals of the provinces. In many countries we are told that kids are leaving high school unable to read smoothly, speak eloquently, or write legibly. Cries for the return of the good old days are heard throughout university land, and also at parent-teacher association meetings. A return to the 3 R's, and the golden age of education. The problem, of course, is to find out when this golden age of education was. Was it better in the 30s or the 40s or the 50s? Were our kids really better educated then? I really can't see how they could have been.

Teaching has always been a poorly paid profession. In 1943, for example, over 75% of Canada's teachers received less than $1,200 annually. Hardly enough to attract your brightest minds. In 1955, 15% of elementary teachers didn't meet the minimum requirements set even for those days. And the minimum requirement, incidentally, was a high school education. 40% had no college degree; 15% of university teachers hadn't more than a B.A. This is not to say that there weren't some fine teachers out there. I certainly had some and so did you. But there also were some unimaginative dimwits who would have been better off in animal training.

Today there are still good teachers and there are poor teachers. There are still bright kids, and there are dull kids. But the surveys, however, continue, complete with quotes from disgruntled professors proclaiming that we are raising a tribe of ignoramuses, and pointing the accusing finger at high school and elementary curricula and teaching methods, and other factors seem to be largely ignored.

The principle that every Canadian has an equal right to an education has become confused with the dogma that every Canadian is equally educable. And this is not true. But we expect teachers to cope with this myth. Also, the constant haranguing that a university education is necessary for any of life's successful pursuits has had its effect. Plus the fact that we are living in a wealthy society. Previously lack of money was the major reason for not wearing the old school tie.

The baby boom, immigration, and mature students have swelled the numbers arriving on campus and one important fact often ignored by these carping critics of curriculum is that university standards were lowered in some cases, granting admissions to more students qualified or not, because they represented money needed to keep the institution afloat. So after reducing the applicant's qualifications to his ability to reach for his wallet, it ill behooves the university faculty to label our kids as a stupid product of incompetent high school or elementary teachers. I think we have a fairly knowledgeable group of kids today, and I travel a lot

across this country, meeting a lot of young people. It's just that they are more informed about different things.

There is no doubt about it, the media has a tremendous effect, it's up to five hours, five to five and a half hours a day, actually, that the Canadian family has the television set turned on. So for children that's more time than they do anything else, except sleep. For everyone in general, but children in particular, it is their main day to day mental activity. The problem is with that we've come to think of television as a public utility, like gas or water. It just flows in and flows out, and we sit in front of it. How many times have you sat in front of the television set and said "**Isn't that a lousy show!**" And you keep on watching it, you don't turn it off. It has become our parent, our teacher, our babysitter, our friend, all rolled into one.

We have, for generations, believed in the necessity of teaching children how to read. That has been sort of our number one priority. I believe that today it is equally important to teach children how to watch. And this teaching can be done in our schools. It can be done in our family setting. We can select good programming, we can watch it together, we can discuss it afterwards. And in this way the television set is used as a means of communication within the family, instead of an alienating factor as it so often is. And my concern about television is that it makes us very selfish, and it lays guilt trips on us. It puts us down all the time.

When you see these wonderful commercials of the mother waxing her floor, it's always a $100,000 home she's in. She is always lovely looking, beautiful, and dad's a bit of klutz, but he's quite handsome, and he's helping out. The kids get this kind of image from the set, this isn't reality, they are not getting reality.

We are bombarded by these high powered messages to indulge ourselves, to pamper ourselves, to pamper our persons, and our egos, and we are made to feel guilty if we don't give in to every whim. Have you ever noticed how guilt is built into almost every television commercial you see? There in gorgeous colour, you can be put down by this constant barrage of guilt-causing accusations. Your cereal is soggy, shame on you! Your margarine doesn't say "Parkay" when you lift the lid, and you don't get a crown on your head when you taste it. You know your wash isn't white enough because you don't use Arctic Power or Tide or Impact. Your hair is dry and lifeless and your pantyhose sags. But then they give you hope, you see.

One mother said to me, "**The thing that worries me about TV is that it teaches my children that every problem can be solved in 60 seconds. They start with a problem, 60 seconds later you've got the answer**". And life isn't quite like that. But they tell you you can have instant sex appeal with Ultra-Brite, that's all you need. You could escape on the wings of man - that glorious vacation. And if you've got your health, you've got just about everything, and you can have that with Geritol. And if you kiss her once, she will kiss you again, if you're certain with Certs. There's no such thing as acid indigestion anymore, we have Digel. There is no irregularity, you can have Ex-lax. I used to think I had dry skin, but now I shudder to inform you that I have the heartbreak of psoriasis. Or maybe worse than that, ring around the collar. But don't worry, you see, for any dream, for any hope or wish you have, just drop in and see Mary at the Royal Bank; she'll fix it all up for you. Or HFC where they won't let you borrow money needlessly - unless it's for his and her snowmobiles. And if those 42% payments keep you awake at night, just take Sominex and get rid of that.

The current programs that keep millions riveted to the set are reflecting and encouraging a society dedicated to self-indulgence. And in this milieu, programs such as Science Magazine, or Man Alive, or The Nature of Things carve out a fairly lonely niche, because a program that speaks about values and ethics and concern for what's happening in our society, or love for one's fellow man are hard to watch. People don't want to watch that kind of program; they don't want to be bothered and if these programs weren't on something like the CBC network, they would have disappeared long ago. The fact that Man Alive has lasted for 14 years says more for the network's high objectives than it does for society's viewing preferences. Because it is hard to watch and to be reminded that you are indeed your brother's keeper.

Most of the time when I look around me, I like what I see. It's not true that the media always covers the underbelly of society. There are some optimistic and hopeful things we see. And yet, in many ways today, at a time when we never had it so good, I'm very concerned because this is a very dangerous age. It's an age of lulled emotions, our spirit tempered by affluence, our fears soothed by these smooth voices of consumerism that tell us to eat, drink, and be merry, for all the world really wants is a bottle of Coke. We are indeed looking for the simple solution - the miracle elixir likely with KL24 added to give fast, fast, fast relief, and it won't upset our stomachs.

We are pre-occupied with self. Concerned with "**me**". Do we have the courage to tell a pampered generation that there is a hurting world outside Edmonton? How do you penetrate cocoons of apathy woven by affluence to let in the cries for social justice? How do we ask "people" questions?

A number of years ago I interviewed a man named Elie Wiesel. He is an author, a poet and a survivor of the death camps at Buchenwald and Auschwitz. He talked of the horrors of the Holocaust in a way I and many of my viewers, will never forget. The great sin, he said, was not so much that it happened, but that people remained silent. The slaughter of millions was ignored, not mentioned, and people knew. He said we are all witnesses and as witnesses, we must tell the story to others, and that was all he was....a story-teller. If we want to make this a better world for future generations, we must become story-tellers to our students. What stories shall we tell our students today? What are we witnesses to?

I think if I were talking to a class room of 10 to 12 year olds I would tell them about other kids their own age.... only these kids live in Northern Ireland. These kids are not learning how to play hockey or the newest video game....they're learning how to kill. The only game they've ever known in their lifetime is war. We could add up on our new computers the 2200 people that have been violently killed there since 1969....1500 of them civilians. 7000 explosions - 27,000 shootings - 900 kneecappings and the hijackings, robberies and arsons.

I would tell my geography class, when we were learning about South America....I would tell them of the gunning down of Archbishop Romero in El Salvador....the killing of the Canadian Raoul Leger in Guatemala, the abduction and torturing to death of 12 year old Joel Speratti in Chili.

I would say to them, when studying literature, a quote that Jacob Timmerman of Argentia said to me after 30 months of isolation and torture. **"When you are full of pain and darkness....do you know the meaning of time? Have you touched time? When you have plenty of time.. when time is endless....when there is no end of time and therefore no end of pain and darkness....what do you do? The big temptation is suicide...the other temptation is madness."** Let's discuss what he means.

OR - Perhaps when we turn to history and Africa is mentioned....we could talk about Soweto...and we could tell the story of the beating to death of Steve Biko...and why....or the life imprisonment of Nelson Mandella. And after we could possible discuss Canada's involvement in that sad country. While we're in that country we could describe the 60 million starving people in East Africa right now. In Somalia alone there are one and a half million war refugees with not enough medicine and food....where hundreds are dying daily.

There is another story to be told today. A story very similar to the holocaust because we too are keeping quiet when we have full knowledge of what is going on. A story of the greatest holocaust mankind will ever know.

The story would begin on July 16, 1945 when an atomic bomb was detonated at the Trinity test site in New Mexico....Less than a month later - August 6 at 8:15 am a fission bomb with a yield of 12 and a half kilotons was detonated at 1900 feet above the city of Hiroshima. By

> Can ordinary people have any affect on the "powerful" things of this world?

today's standards it was a small one, classed merely as a tactical weapon. But it transferred a bustling city of 340,000 people into HELL. The number killed outright or died in a short time of injuries was a hundred and thirty thousand. Tens of thousands of others suffered injuries of every description or were doomed to die of radiation related sickness.

A few weeks ago I did a Man Alive program at the American Trident Missile base. The destructiveness of the Trident system can be seen by considering that each Trident sub will be equipped with 24 Trident-2 missiles, capable of striking any point on over half the earth's surface. With a typical payload of 75 to 100 kilotons per war head, one Trident sub will be able to destroy 336 cities or military targets with a blast 5 times that inflicted on Hiroshima. And there is a fleet of 30 subs. That's 12,240 nuclear war heads. That's 30 times the number thought adequate for strategic deterrence.

Based in Bangor, Washington, 60 miles south of Victoria the Trident program will place most of B.C.'s population within North America's most important target zone. Since Trident will be the greatest nuclear base in the world, it will be a prime target for nuclear attack. And with an attack - not just B.C. but also a large part of Canada would be affected by radio active fallout. The Trident subs will have to travel through the narrow Juan de Fuca Strait which is only 12 miles wide at some points. This means that they will travel through Canadian waters on their way to the Pacific. Did anyone ask you if this was O.K.? Why not? Could it be that in technological warfare people don't count? The Canadian people have never had the chance to debate - and either approve or disapprove of the program. William Epstein, former Director of Disarmament in the U.N. Secretariat says, **"We should argue the case for no incineration without representation."**

So - what can people do? Can ordinary people have any affect of the powerful "things" of this world? Well, I don't know what you feel you can do, but I know what Jim and Shelly Douglas of B.C. did. They protested at the missile base. They climbed over the fence and talked to workers. They handed out leaflets to people entering the base. They also went to jail several times. But this action influenced others. The designer of the missile listened to his conscience and resigned. Some workers felt they could no longer collect a pay cheque for building weapons of death. The chaplain decided he could bless the war machine no longer. The Archbishop of the Seattle diocese called the Trident missile base "the Auschwitz of Puget Sound" and went public with a plan to withhold personal income tax at the risk of imprisonment to protest 500 billion dollar defense budget. People do make a difference.

We can cope easily with life's problems on a short-term basis, propped up by this good life of consumerism which is, after all, why you went to school, isn't it? - to learn how to fit in, to be moulded into this competitive society, this materialistic society. It all goes well until we start asking some of the big questions like - Why am I here anyway? Do I have a purpose? Does anything have a purpose? Now there was a time when a young person could discuss these ultimate questions with his parents or his grandparents or his local minister. Today his parents, if he still has two, are busy watching Let's Make a Deal. His grandparents have been shunted off to the Sunset Manor Haven for Golden Age Citizens, and his local minister is running a creative divorce therapy session.

These are, however, theological questions. And so for some young people, religion seems to be the obvious place to look. And there is a new interest in religion today on the part of the young, likely the cause of our confusion and disappointment with the 60s and 70s. Science and technology have really not produced the promised Garden of Eden. By this time in history we were supposed to have licked all of these problems. Our timetable has somehow gone awry. And religion is said to be a source of comfort and assurance to the disillusioned and the frustrated. So there is a turning to religion today.

We are all familiar with Karl Marx's statement that religion is the opiate of the people. But he is less quoted on his other observation that religion is the sigh of the oppressed creature. The heart of the heartless world. The spirit of the unspiritual situation. Much has been said and written about the loneliness of modern man. About his quest for community. And the need for community among the frustrated is met by some today in religious cults, or sects, or communes of believers, whose messianic leaders promise individual happiness and peace of mind. It is a spiritual group grope. They provide the sense of community that is lacking in society, the members develop an "esprit de corps" and in the extreme a fanatical bond that only death can release. The dangers of the extremist cults are all very real and have recently become quite obvious to most of us. I receive questions and telephone calls and letters from people all across the country wondering what they can do about their young person who has joined such and such religious cult. And there's really not much you can say to them, because there is not much you can do for them at that stage.

Take a look
at some of the words
that have become unfashionable . . .
duty . . . loyalty . . . patriotism . . . discipline . . .

But we have some more acceptable fringe groups. They are much more subtle in their methods which gives cause for concern. And these are the electronic evangelists. Under the leadership of people like Oral Roberts, Garner Ted Armstrong, Rex Humbard, and Pat Robertson, and Jim Baker, and a host of other self proclaimed messengers of God, there's been a migration of the healing and deliverance ministry out of the old rural revival tents into the Hollywood Bowl, Madison Square Garden, and especially on our television channels. The TV evangelist today has packaged the old Christian gospel as slickly as a new deodorant. One shot and you are good for eternity. It's a self-centred faith, and an individual success-oriented spiritual shopping spree. For those whose theology cannot be summed up by a bumper sticker, it's kind of hard to understand, but, as Tom Wolfe says, we're living in a time when we are selfish; we are shut into our own inner space. A decade where everyone is consumed with one solitary notion - let's talk about me. An era dedicated to the cultivation of self. Those of us who are involved in education wonder what we can do about this new narcissism, as it's been called. The great turning inward that is in our society. It's our new morality. And the greatest single feature of our new morality today is this degree of selfishness. The prime bit of evidence I offer is your local book store. It is bursting with best selling copies of Get Ahead-by-Intimidating-Thy-Neighbour self-help books. They promise power, they guarantee success, and they tell us to look out for number 1. They tell us its okay to be dishonest and selfish and scheming; just don't get caught at it. How To Be Your Own Best Friend is a current top seller, so is Winning Through Intimidation,

Looking out for Number 1. Their philosophy is that years from now it won't matter much anyway. Life to these authors is a zero sum game. It has all the significance of fighting over the biggest piece of candy. It's the fight of the solitary ego against other solitary egos. D. Keith Marrow describes it thusly: He says, "**People are being told today to become pyschological jocks, out to get a black belt in nasty**".
Part of the reason for this, I suppose, is our reaction to the 60s and the 70s which were characterized by a lot of youthful idealism. Perhaps we've now become hardened cynics. Certainly the great passions that gripped the campuses only eight or nine years ago seem lost in the dust bin of history.

A classic example of this is Jerry Rubin. You might remember him as the Yippee leader of the 60s. Millions listened to Jerry and to his exhortations of love and brotherhood and peace and justice and freedom. He and others like him spoke to a generation that was going to change the world. Well, what becomes of a Jerry Rubin when the TV cameras are turned off? What do you do when your utopia doesn't evolve overnight? Well, you head for California, that great spiritual supermarket of North America. Let me quote from his book "Growing Up at 37". "**In the five years from 1971 to 1975, I directly experienced EST, Gestalt therapy, bioenergetics, rolfing, massage, jogging, health foods, tai chi, esalen, hypnotism, modern dance, meditation, Silva mind control, Arica, acupuncture, sex therapy, Reichian therapy, and More House therapy - a smorgasboard of new consciousness.**" And what was the result? He lost 30 pounds. But most important, he said, he has shed his addiction to love. He has learned, and I quote, "**to love myself enough, so that I do not need another to make me happy.**"

> The human being is not an isolated independent thing in itself.

I stood on a million dollar mountain estate overlooking Sacramento, California and as an evangelical preacher pointed to his vast swimming pool, and announced proudly, "**This is where I baptized Eiridge Cleaver last year. I baptized him in this pool so that he might be cleansed and receive salvation. He is now born again; he's one of us**". And I said, "**What a damn shame**". I liked Cleaver more when he was out raising black consciousness all over the world; when he was urging blacks to stand up and be heard, fighting for their rights and equality, because black was beautiful. But the signs of turning inward are all around us - the best seller lists, the self realization therapists, the religious snake oil peddlers.

Our consumer society reflects a catering to "me". I'll buy now what I want at any expense to fulfil my desires right now, because I'm being told on all sides that it is not only right but good to indulge and to pamper and to satisfy myself. Our natural resources are being rapidly depleted because we care about me, here and now, not tomorrow, or the next generation, or not even about others who are sharing this planet with us. And not caring about others seems to be the mark of this generation.
Take a look at some of the words that have become unfashionable in the past few years. The word duty is out, loyalty is out, patriotism is good for a laugh, and somewhere along the line, things like discipline, and skill, and stoicism, are also in the corrupt category. Take these words and hold them up against this Gestalt prayer that everybody was putting up on their wall in parchment not too long ago: "**I'm okay, you're okay**," and it goes on to say, "**If we meet, fine; but if not, that's okay too, because I'm not here to live up to your expectations...**" and you know the one. Reminds me of the selfish man's prayer, "**God bless me and my son, John, his wife, my wife, us four, no more**". It's getting worse than that now, it's getting to be "**God bless me, period**". The idea that one must give of himself to another is rejected. In this context, one wonders what all that love of the late 60s and 70s was really about. It seems to me, these days, that one is prepared to be in touch with someone only to the degree that is convenient.
We now have these curious marriage ceremonies that young people write for themselves where at the highest point of commitment to each other they write in more codicils and qualifications that a Philidelphia lawyer would when marriage contracts were drawn up by mutually suspicious families. They say I will love you, I will love you, these ceremonies go, for as long as things are meaningful between us. Now this may be a very realistic way of putting things, but it's a pretty bleak view and one that implies that really in this relationship you are essentially alone. The aloneness at this moment of marriage is seen as a protection of personal integrity. It does not carry with it the implication that just possibly somewhere down the line that one might require the other one to help out a bit, or that loneliness will never occur.
Another weathervane which points to increasing preoccupation of self is our attitude towards sex. It's almost coming to the point where chastity, as one writer put it, is considered a sign of an unhealthy preoccupation with sex. So words, such as chastity, virginity, fidelity,

join this ever growing list of antique words. Sex for us today has been reduced to so many neurons firing in the brain. An affair of the nervous system. Not of the heart or the emotions. Consider the sexual manuals. They are mostly written without consideration of what in other times, was called - and here is another quaint phrase - the sanctity of marriage. Rather they are written for sex partners. And sex is presented as a technique, a workout, a set of gymnastic exercises to be learned much like a quarterback manages football plays. It's no accident that the sex expert in the school is always a gym teacher. He's the only one that can understand the instructions. Sex is not considered to be an expression of love; that's all syrupy Victorian drivel. We moderns are interested in getting our neurons to fire at the right time. It's a relief of tension - but is it love?

Modern man is like the mythological Narcissus staring at his reflection in the pool adoring himself. Or he is a yogi chanting his mantra, gazing at his navel. And we are led to believe it should be the greatest height of self-realization, all the while shut up in his own inner space. We seem to be enamoured with the "there-is-a-hidden-genius-inside-every-person" kind of self. Somewhere in there is a great person that must be liberated. And if we can only honour enough of one's innermost psyche a great person is going to blossom forth. It's a false idea that inside every human being there is a glorious, talented, overwhelmingly attractive personality that will be revealed in all its splendor if the individual just forgets about courtesy, co-operation, and consideration, and proceeds to do exactly what he or she wants to do. The human being is not an isolated independent thing in itself. It reflects the existence of others. Today's youth would never have lived to grow up if a lot of parents, doctors, and nurses and farmers and factory workers, and teachers, and policemen and firemen, and legions of others, didn't ignore their human potential, and make themselves do jobs that perhaps they didn't feel like doing in order to support the health and growth of children.

We hear a lot these days about the search for identity. There's kind of distress called the identity crisis. I don't know who I am. How many people have heard that line? How many psychologists and counsellors have heard it? How many bartenders have heard it? I don't know who I am. This sentence has no meaning absolutely whatsoever unless spoken by an amnesia victim. Many people say they don't know who they are. Actually they do know. What they really mean is they are not satisfied with who they are. They feel themselves to be timid or colourless or in some way full of faults. They have soaked up enough of this advertising and enough self-improvement manuals to believe in this inner wonderfulness. They started on a quest to find their identity. How many parents and teachers, I suppose, still tell high school students, "**Now when you finish high school, why don't you take a little trip to Europe to find yourself?**" I like psychiatrist Vivian Racoff's description of this. He says those that go to Europe to find themselves expect that somewhere between the Eiffel Tower and the Colosseum there is a valley where the true self resides. And one can go there and pick it up. Because he says, if you notice, the true self is always somewhere else and usually in a warmer climate. The search for identity is predestined to fail. Identity is not found, identity is built every day, every minute throughout the day. And the self is not a handsome god or goddess waiting coyly to be revealed. On the contrary its complexity, confusion and mystery has proved so difficult that throughout the ages, men and women have thought gratefully about losing themselves. Not finding but losing themselves. They lose themselves in great works - in nature, in scientific research, in writing poetry, or in fashioning things with their hands or in projects that will benefit others rather than themselves. Some of the greatest people that I have met, in the years of travelling and interviewing for television, the Jean Vaniers, the Mother Teresas, the Dorothy Days, the Robert McClures are people who have lost themselves in service to others. So the true self is you, all of you, discovered not in the mountains cross-legged in front of guru, or rolling around on the floor in a scream therapy session of eating vegetables or drinking chicory in some pseudo religious group. Nor can it be found between the covers of a paperback in a drug store. It is built, nourished and sustained, through your relationship with others.

We must expand our ideas about what should be taught in our schools. What should be included in our curriculum? Somewhere along the line, and I suggest it should come fairly early, we have to start talking about what it means to be human, what it means to care about our fellow man in the world. And surely we know that the onus is on us who live here in Canada, those of us who are fortunate enough to live here in Canada. Barbara Ward says "**Our children are the princes of the realm**". They are the favoured, they are the blessed. And indeed they are. And we as parents and teachers and educators should constantly remind our children how fortunate they are compared with children in other parts of the world. Never let them take it for granted. Think for a moment if you were the parent of a child in Zambia or Calcutta or a parent in Chile, or Brazil, or a parent perhaps of a teenager in Belfast. I've seen these parents and I've talked to their children. And their concerns are not permission slips and cross-walks; their concerns are food to get through one more day or health in a polluted area of raw sewage, or life when a sniper's bullet is always a real possibility. Yes, indeed, our children are

the princes of the realm. And if the awareness of this is stressed to our children, they can see the need not only to be grateful, but to share what is needed in our imperfect and unbalanced world. Our world sorely needs citizens who are dedicated to righting that imbalance and who have learned what it means to love. And I know, as a parent, in the final analysis, all I can do really is to care for my children and to show them love. That may very well be also the heaviest obligation of the teaching profession.

> . . . hope, for the discovery of the essential goodness in all young people. . .

Many years ago there was a great communicator named Paul, and he used to write letters to a lot of people. He wrote one to some people who lived in a place called Corinth. He talked a lot about clanging cymbals, tinkling bells and moving mountains and looking through a glass darkly and now two thousand years later I have the presumptuousness to rewrite that. I've done a paraphrase of it and I'd like to conclude with this. Though I speak with the tongues of Gibran and Fromm, and have not love, I'm as useless as the roar of a snowmobile and as boring as a TV rerun. Though I have the gift of education and academic achievement, and understand all textbook mysteries, so that I could move mountains of paperwork, and have not love, it profits no one. And though I give all my money to the United Appeal, and I give up my body to the university or to Weight-watchers and have not love, it is useless. Love suffers yet is kind. Love is despised yet remains. It bears all things, it believes all things, it hopes all things, it endures all things because love never fails. And whether they be the prophecies of Malcolm Muggeridge, they shall fail. Whether they be the tongues of Billy Graham, they shall fail. And whether they be the advice of Ann Landers, it too shall pass away. For we know only in part. When I was a child in my profession, I spoke as an expert. I behaved as an expert and I thought I was an expert. But when I become an expert, I'll put away these childish things. For now I see through a glass dark with my own hang ups. And in time I shall know myself as I myself am known. And now abide these three - faith, in my ability as communicator to touch hearts as well as minds; hope, for the discovery of the essential goodness in all young people; and love, love for a fellow human being. And the greatest of these is love. □

FRANK FEATHER

Managing Tomorrow: Its Teaching, Development and Practice

Transcribed with minor revisions from oral presentation at SPECTRUM '82

A teacher if anything is a person, in my language, who helps someone else educate themselves. I think we have got to start looking differently at a few things in society. What I want to do is simply throw out a lot of ideas - I have a lot of material to share. You are going to have to draw a lot of your own conclusions from what I am telling you, in terms of what are the implications for you personally in your life.

You should do this when you read the newspaper or hear a news story or watch some human behaviour going on. You should ask yourself, "**What does this mean to me?**" - What I just read, what I just saw, what just happened. For example the situation with the test tube babies, the first one was born nearly three years ago, believe it or not. Children in school began asking questions. "**Will I be having my baby this way?**" That is the impact that these kind of events have on society and on people. This is the "leading edge", as Marilyn Ferguson would call it, of a change that is occurring not only in terms of a scientific development but also in terms of a value - what is acceptable and not acceptable to people.

So if you can cope with anything and you are pretty well fed, if I told you that waiting outside this room there were two hungry Bengal tigers and I am going to let them in the room, you have something with which to cope with then. Just pretend for a moment that underneath each of your chairs is a locked wooden box with a rusted padlock on it. You might not be able to get into it. Inside this box is a World War I rifle. The rifle is disassembled, but not to worry, there are some instructions telling how to put it together. However, those instructions are written in Swahili...This to my mind is what we are dealing with in MANAGEMENT today.

We are trying to manage unexpected situations. We do not even know that they are going to occur. We do not even know which door the tiger is going to come through. And we are dealing with antiquated methods of going about it. This is the message that I want to try and get across.

I had the privilege of being involved a year and a half ago with the First Global Conference on the Future, which was held in Toronto. In the closing address to that conference, Laurie Strong said that what we need to do is to develop a new concept of management in the world. What he was basing this comment on was that no matter what problem you look at in the world, it is a management problem. Whether it is lack of resources or lack of management of resources, it is bringing more creative ingenuity to bear. And we have lost control of what is going on in the world. We need better management skills in order to become better managers to this environment in turmoil. We have to try to understand what is going on in this world, - all this complexity that we are surrounded by.

One of the most important elements of achievements in the corporate background here, is the ability to deal with reality. In other words to deal with the way the world **is**, not the way you would like it to be. Most corporations have so much conceit that they are really not willing to see what is really going on in the world. It is the same with any business, and with the government, and the same with the international governments. That is why the world is a mess. No one is listening to what people are saying. We are not looking at what people are doing and we are not acting accordingly in a proper managerial sense.

We are living in this era of profound erratic change where icebergs lurk below the surface. Little tips keep peeking up and if we are not careful, as Peter Drucker says in his latest book "**Managing in Turbulent Times**", it is very easy to finish up on one of those icebergs. You wreck the

whole boat. You also have to keep your eyes open not only to spot problems, but importantly, in my mind, to spot opportunities. This is what we are not doing in management.

Even within itself every problem also presents an opportunity. A good example of this is the Bata Shoe Company. The whole mission of the Bata Shoe Corporation, when Tom Bata came from Europe after the war, was that the Bata Shoe Company was going to become **the** shoemaker in the world. He saw that there were millions of people without shoes to wear. So there was a tremendous opportunity in the world and he wondered how could he address that opportunity - to have that problem turn into an opportunity and to capitalize on it. In a very innovative way he did not simply set up manufacturing plants in North America to export shoes overseas; he set up the plants overseas. He created the local infrastructure: economic base, employment, housing, and hospitals. He created everything to go with each plant, even local management training. How many businesses these days are even thinking of this? Tom Bata was way ahead of his time in terms of what I would like to see in some kind of world development on an equitable basis.

Economically we have to recognize that we are living in a single world. The world is a single planetary production site. It is a single multilateral supermarket as well. So things are going to be made and things are going to be sold where it is most effective and most economical to do so. North America is in the process of losing its textile industry, shoe industry, steel industry, automobile industry, and in the words of the King of Siam, "**etc., etc., etc.**"

The Japanese already know this. The Japanese are already deindustrializing to become a post industrial society. They are planning for the day when they get out of the automobile industry, at least in terms of their domestic production, because they realize that they cannot afford to compete with countries like Spain, Brazil, and others where the resources are cheaper, where energy is more accessible, and so on.

Since Japan has to import most of its energy, it is aiming to become the information utility of the planet. They are going to be the leaders of the Information Age: the leaders in microelectronic technology, the leaders in efficiency and more. In the rest of the Third World, Japan is locating a lot of its businesses in these countries deliberately. The Third World will manufacture one quarter of the world's output by the year 2000. The North American share has dropped from 45% to 38% since 1960, and will certainly be less than 30% by the year 2000.

There is going to be a massive shake-out of North American industry. We have to prepare for it. What this means is that we are going to have to retrain nearly every person - not just because of industry but because of the electronic revolution which is here.

Look outside here in the exhibit hall. The impact of electronics, regardless of what goes on in world trade, is going to change every job in Canada in one degree or another. Some jobs are going to be totally eliminated in terms of what they are. Other jobs are going to be totally rewritten. Complete new jobs are going to appear. Look through the positions advertised in newspaper columns. You know we say we have a million people out of work, but look at all the jobs that are available - all high technology, all energy industry, all electronics. We do not have enough people trained in these areas. We are planning in the past.

If you look at the job columns five years ago, or ten years ago and compare them, they are all different jobs. The whole work force has changed considerably, and by and large people have had to retrain themselves. This is why I am glad to see the initiative of a conference like this. People are asking where do we need to refocus our energies? What is the new Spectrum that we need to look at in terms of vocational training, so that we can move into a new future. Yesterday is clearly over.

I could go in length about government interface with business and what skills are required here for training management people. There is going to be more and more interference by local government, by provincial government, by federal government, and if you are an international company, by international governments. The web just gets more and more complex. The latest federal budget in Ottawa is so complex that one of the morning stories in the Globe and Mail said that they had identified a tax accountant who understood line "53E" on the income tax return. But out of that ridiculousness is the reality of what we are almost dealing with, in terms of complexity. We keep trying to build on the old systems and we just finish up making them more complicated and less understood. I think you will see more of an American phenomena in Canada in terms of lobbying. It is not called that in Washington specifically. Sometimes if goes under another guise. But there is a lot of money spent on lobbying in Washington, and hardly any money spent on lobbying in Ottawa. How do you lobby the public to get what you want as a private enterprise? I think you will see more business/government cooperations in terms of these joint ventures.

The Alsands and other projects will not get off the ground without more government involvement. The payoff simply is not there. There are massive projects to be undertaken in other countries.

On the subject of education, Canada has got a very highly educated, highly professional work force. This is an exportable skill because we are living in the Information Age. We are living in the Knowledge business, so as well as developing our own people and retraining our own people, we can also export that skill to other places that need it and are prepared to pay for it.

> It is all becoming one spectrum. We are going to be constantly re-educated.

An example of the technology I mentioned is that by 1990 most of the world telephones will be linked together with direct dialing, as part of one huge network. You will be able to call anywhere in the world. Most major corporations will have supplemented this with their own networks. They will have satellite receiving dishes. Large corporations already have this so they can bypass the antiquated postal system and everything else. The only way that Mr. Warren is going to have the postal service survive is through legislation, because electronic technology totally bypasses it through electronic mail, and will wipe it out. The only thing you will be left with is junk mail, and most of that is going to come through cable television advertising and in that fashion through telidon. The only way the post office can survive as a current corporation is to legislate itself into the courier business or into the video TV business, in order to continue delivering that information. The mail system is an information delivery system. And the electronic environment has arrived in banking - you all know these instant banking machines. It started out you just go and get cash out, now you can make payments. Soon you will be able to settle any transaction.

An electronic environment - we are living in an electronic world. In an electronic environment you can do anything you want, anywhere, twenty-four hours a day. You can do it instantly. This is the world that we are living in. This requires new competencies, new skills that we need to develop in terms of management of information, management of systems, and management of organizations.
This has implications for the economy generally, what I call the economic interface with the corporation. Any economist worth his or her salt will admit that they do not understand Economics anymore. Nobody in the world knows how to manage the Canadian economy.

Let us not just condemn these people for ignorance. Everybody is in the same boat. But what is happening is that we are using outdated economic theories based on industrial methods of production, industrial economics when we are living in a post-industrial age. The primary economic good is **information** now - not land, capital, buildings, or machines. The accounting profession is still grappling with inflation accounting, and with human resource accounting. They do not know how to deal with it. We have not even yet recognized the value of information and that is the most valuable resource any company, any organization, any teaching establishment has. This is information and human resources and no where do they show up in any balance sheets - except in the expense statement as a written off cost. So what is the sense of economic theory.

This does not even get into the issues of work that is done at home - work done through barter, me fixing your basement, you fixing my basement and so forth. We do not get counted in any economic statistics. So we have got to really find what we are doing. What does work mean? Is it an avocation or a vocation? My avocation as a hobby has become a vocation. And where do these things mix together and become blurred? What is fun? What is a hobby? What is work? What is education? What is re-education?

It is all becoming one spectrum. We are going to have to be constantly re-educated. We are going to hopefully try to match what we are really interested in with what we really want to do in the world, as a job. A job does not necessarily have to be something that you get paid dollars for. Are we working here this morning? You are not getting paid for it. In fact you are getting paid to be here probably. So the definition gets turned upside-down in that kind of environment. So what does unemployment mean anymore? I would love to be unemployed if it gave me the freedom to do what I wanted to do. It is how we define the word and the connotation and the values attached to it. We are using these archaic industrial era terms that have to be rewritten, reunderstood for the new age.

The competition, the only way you can compete is to differentiate your product by better delivery, more creative products with some human element input into that product, or better service. People care about what they are buying these days. It has to be tailored more to their own needs. Customers are more knowledgeable - we say that every generation is more and more so. In

fact they have now been burdened with an information overload. If you want to go and buy a computer terminal or word processor you do not have a clue what to buy. There are hundreds you could choose from. And so how do you make a sensible decision in that kind of environment? If a company wants to sell its product it must differentiate that product and get the message across very simply - when and where and how it is different. All of them so far are doing it. There is a big scramble, and as soon as it becomes defined, the technology is out of date anyway, so that is another complication which is thrown into the equation. So companies are constantly re-inventing this technology at a very rapid rate.

People are very quality conscious. It is futile to produce cars that rust away or are to expensive to operate. I am struggling with two cars at the moment. We are brought up in an environment where you need a car to get anywhere. It is quite a while since I was in Edmonton. I think you have moved the airport. It is closer to Red Deer than Edmonton, but it is called Edmonton

> 6 . . . think big, see the big picture, go and sit on the moon and look down at what is happening with the jigsaw puzzle . . . 9

International Airport. I cannot understand it. The whole structure is built on cars. You cannot go to the airport unless you have some form of automotive transport. It is too far away. The whole city structure is based on cars. Our highways, getting to work, again an industrial era concept of moving people, and products, and things, from one place to another.

In the Information Age, which is what Toffler talks about when he talks about the "electronic cottage", the work comes to us. Information can be sent anywhere at negligible cost. It does not have to be loaded on a truck. You do not have to be downtown anymore. This again has implications for training or how people are going to do their work, how they are going to interface or not interface with their work colleagues, and what is the new work environment. How much is at home? How much is at school? How much is at the office?

So if any company or organization wants to get in tune with the new environment it has to balance what is going on outside with what its purpose and mission is supposed to be. Otherwise it's going to fail. Very simple. This is what happens to the dinosaurs. They just do not realize what is going on in the world and they die. They go extinct. When an organization gets into or out of sync to this external environment the problem is that it starts to look inward. We all start to contemplate our navels. We look inside to try and find out what is wrong. What is wrong is out **there**. The answers, more often than not, are outside. We know more than enough about what is going on inside. We know all the nuts and bolts. What we have got to do is restructure what is going on inside to match what is outside. Otherwise we do not have a product to sell anymore.

We have got to become competitive in the market places at a very simplistic level. But we look inside and we get all tensed up and we cut budgets and if creative ideas come up to solve problems, well, they will have to wait until times are better. Times do not get better and the organization goes down in a downward spiral. Things go from bad to worse. Eventually somebody new comes in or a new idea is brought out that gets it off on a new growth path again. This won't happen unless there is innovation and creativity.

If you are in the field of vocational training, you are selling products. You see, you have got to be selling what the market place wants. What kind of education is it wanting? What kind of vocational training? Where is the demand going to be? Not just today, but five years from now. The people that we are educating today - how are we going to have to re-educate them somewhere down the road? You have to lay plans for that now.

I have what I call the industrial and the post-industrial structure of management or organization. The industrial model is what I call a left brain model. It is very linear, very traditional, very logical, but it does not work anymore. The post-industrial model is open, organic. It is not a rigid system - it is flexible, it is fluid. We have to be able to adapt, be humanistic, be creative. This is the right side of the head. We have got to get more into predominance and match the two together to come up with a better way of operating.

We need creative imagination then. It very often has to be spontaneous. We have to come up with new solutions to problems in terms of problem solving. There is no precedent anymore. It is a new ball game. Rule books and manuals of procedures are out of date even before they are written. The Bank of Commerce had one which was twenty volumes, so every branch in the country had a set. Up-dates keep coming out. Three, five months after they are supposed to be out. Sometimes two months later somebody inserts all these updates into the manual. It goes back on to the shelf again. What happens if you want to do something? You ask the person with the most experience, or you call up another branch, or you phone the head office. You do not have

time to look it up. It is archaic. In actual fact, in today's environment it is easier to think something up than to look it up. This is what we are dealing with. You have got to come up with a new solution and do it yourself.

The implications for managing in this new environment are five or six fold. First of all, to be **holistic**: to be a holistic thinker. You have to be able to think big, see the big picture, to go and sit on the moon and look down at what is happening with this jigsaw puzzle on earth. And when you do that you see the insanity that is going on here on this little mudball which is spiralling through space at hundreds of thousands of miles per hour with all these idiotic people running around doing stupid things to each other. This is the environment of the world we are living in. It is such an insignificant part of the whole universal life.

You can do this with your own organization, with your own educational establishment, with your own family, with your own business, with your church, with whatever you have to step back from. Get out of the emotional crap that goes on in the everyday world and say, "**Hey, wait a minute, what is going on here**?" Try and sort out that mess. See the big picture of what is going on. Try and make sense out of it and try to interpret it.

The next thing is to become **futuristic**, to think future, to look towards tomorrow. To be futuristic, in my mind, is to think of nothing else but the future. I believe in a managerial sense that the past is irrelevant. You cannot do anything about the past in a managerial sense. You cannot change the past other than making a better decision sometime in the future. So, in a managerial sense the past is irrelevant and does not matter. We have to learn from mistakes. We have to do things better, instead of looking for scapegoats all the time - what went wrong, navel gazing, oh dear, groaning and moaning, and bitching and complaining. We are becoming a world of chronic complainers. Trudeau's right whether you agree with anything else or not. The present in a time sense does not exist. The present is simply a micro-second of time as you go from the past to the future. What I just said is history. So in my own naive way of thinking as a manager, all I care about is the future. We have to get that perspective in our heads when we are making decisions. What are the implications of this decision? Think it through. Where are we really heading here? Does it have long term value? We have to get off the tread mill that is trapping us between the past and the future. We have got to get thinking more "future".

We have to become what a colleague of mine, Andre VanDam, calls becoming far-sighted. He has a little story that he tells about this. This is a story about a pygmy in Africa. After working arduously with a tribe of pygmies in a dense African forest, an anthropologist invited one of its leaders to journey out of the forest with him. They left the forest and climbed a hill overlooking a high plain. Spotting a distant herd the pygmy asked, "**What are those very tiny animals?**" The anthropologist said, "**Those are not tiny animals, that is a giraffe, which is a particularly tall animal.**" The pygmy had never left the forest before. He had never had the opportunity to realize what happens to the distance, the perspective. He had never developed far-sightedness. And that in an analogy sense is what has happened in organizations. We have lost the ability to be far-sighted, to see what's going on down on the plain. Those little animals down there are really big giraffes, with bigger implications than what we thought and much more important to our long term survivals and organizations.

Pragmatic managers would reply that without taking care of the short term, what is going to happen in the long term? That is true. However, the only reason that the roof is falling in today is because we did not think "future" in the past. Herman Cowan says that the world is going to collapse - it will either be through bad luck or bad management. And I believe it will be through the latter, because Einstein says that God does not play dice with the universe. We are governed by universal laws if you want to get metaphysical about it. I believe that our own salvation is in our own hands, very simply, through better management.

In looking at the environment of an organization, Ian Wilson, who used to be head of Strategic Planning for General Electric and is now with SRI International formerly Stanford Research Institute in California - says that management should pay more attention to today's societal expectations: what people expect, what they want, what they are looking for. They become the political issues of tomorrow, like Proposition 13, the legislative requirements the day-after-tomorrow and the litigated penalties the following day - whether it is pollution control or anything else. This is how fast things happen in today's society because of the strength of public opinion and changes in values and opinions.

So the business organization has got to look more beyond the threshold of where it is at today. Another little story is about two caterpillars that were crawling across the road. One caterpillar looked up and he saw a butterfly fluttering across the sky and said to the other, "**You'd never get me up in one of those things.**" He did not know what was going to happen to him. We have to create organizations in our own mentality where we are

prepared to take off and become airborne and become butterflies, to take on some new form.

We also have to be ready to look for what is not there. The importance of this can perhaps be illustrated by another little story which is from Sherlock Holmes. Sherlock Holmes was investigating or helping the police, as he usually was, to investigate a misdemeanor somewhere in London. The police inspector said to him, "**Is there anything else that you think I should think about?**" And Sherlock Holmes said, "**Yes, there is the curious incident of the dog in the middle of the night.**" The police inspector said, "**But the dog didn't do anything in the middle of the night.**" And Sherlock Holmes said, "**Precisely! Why didn't the dog bark?...**" So we should also watch for what didn't happen and why it didn't happen, because there is a reason why it didn't happen. Maybe tomorrow night the dog will bark for another reason that we should be aware of.

I want to talk now about creativity. MacKenzie just did a big study, written up in the Financial Post in June, I think, under the broad heading the "Mark of Excellence" or "Companies of Excellence" or some such. The predominant factor which they came up with in terms of a successful business leader, and they found the same thing in the United States, is a clear and compelling vision of the business, an overriding goal which gives future direction to their planning and decision making. A vision to which they stick faithfully through thick and thin, through bad times and good, and they continue along that path to that goal.

The organizations which get in trouble forget these goals and they say, "**Oh, we've got to fix this leak over here**". They are fighting fires, plugging dykes, and they do not stick to their futuristic vision. It can be a general motherhood statement or it can be something specific. You know companies that give good service such as MacDonalds, IBM, or Rolls Royce Automobiles strive if everything else falls behind to make sure that the company achieved that objective. So, IBM's goal is if anything breaks down they will be there within twenty-four hours to fix it, otherwise somebody in the organization will get what for. This motivates people to give that excellence. So these are a little more than motherhood statements. They are belief statements. They are what the company believes in, is prepared to stick with.

They are also pragmatic and give a committment to deliver value to the customer and to the community, not just to produce profits. Above all, these visions are comprehensive, they are also very simple. Too many goals or too many visions can get too complicated. People get confused. They do not know which vision is the one they are supposed to be following today. Priorities then start shifting all over the place. You have to have something you can stick to.

A second attribute that MacKenzie found of corporate achievers is that they create an internal environment which keeps top management's finger on the pulse, but which still provides for a great deal of decentralized autonomy to small efficient groups operating as profit centres. Business within the business. This is what Toffler talks about again in terms of his decentralization, his demassification - if you've read the book - of markets, of production facilities, or organizations, and so on. This in a sense is what Reagan is trying to do in terms of decentralizing government organization in the States, to the individual States. I suspect he is trying to pass the buck on a lot of issues and there is no pun intended there.

You have to be able to deal then creatively and quickly at a level nearest to the point of action. This is how nature works. Small tight knit organisms that can quickly focus on attending to the problems and also keep on mercilessly towards this long term vision and goal. An atmosphere is thereby developed where it is considered a worse sin not to decide something than to decide it wrong.

In crisis we become scared to make decisions. When McKinnon was chairman of the Bank of Commerce, he got fired the day I joined the Bank of Commerce, it was January 1, 1974, he was an autocratic leader. Nobody in the Bank of Commerce would make any decisions of any worthwhile significance unless it went all the way to the top and back down again like a big yoyo. This mentality still has not left the organization eight years later. Since it becomes ingrained in the psyche of the people, it takes a long time to regain confidence so they have the ability to make decisions. No matter how much you decentralize, or delegate this will be the case. Sometimes these problems can be compounded by the subsequent managers that take over. If you look at organization performance in the banking industry in this country all you need to do is look at the bottom line. This will tell how good the management system is, how good the managers are, and how good the customer service is - in each branch. It took a non-banker - a non-expert, who did not know anything about banking, Moholand, to go to the Bank of Montreal and take that bank right to number one almost, in terms of profitability. Where it had been the laughing stock of the industry five years ago because of its poor performers, he swept the place clean, got rid of a lot of deadwood, brought in new ideas, and got the thing moving again. The Bank of Montreal still has lots of problems as any organization does, but this is what can be done.

You want lean organizations. Again Bata Shoe Company comes to mind. Its corporate, technical and engineering group in Toronto consists of only ten people, who are responsible for 87 companies in 130 different countries. How do they do it? Through information and management of that information. So you need a tight corporate staff, creative decision making used on the information which is the most valuable resource, and good people. This is the chemistry which makes the organization tick.

> We have to give oddball ideas a fighting chance.

You also need an organization structure which allows people to see that they are part of the whole system. People want to belong to something. This is why we go to work. We do not go to work anymore to work forty years for a pension. We go to work for something to do which is interesting and satisfying to us. This is the new psyche of the new worker: "**I want to be self-fulfilled. I am also a product of the computer age - like the old punch card that says, 'Please do not bend, staple, tear, or mutilate me.' I am a human being. I have cares and wants and needs and more than that I want to be involved in the decision making process as well.**" This is why the Japanese are so successful.
People want to know how their contribution is being meshed with that of the whole organization in this massive environment in which it is operating. If the corporation achieves something how much do I feel I contributed to that. Most organizations do not even tell their people. A little note in the annual report right at the end of the chairman's statement, "**Our thanks to the staff throughout the year.**" It is just one sentence. It is sickening.

You are going to see more and more development of the human resources capability in organizations, not called "personnel" anymore. It is - a buzz word: human resources. It sounds more human and this is what is happening in the United States and in leading corporations here. They are also restructuring. We have an organization chart which I can show you which gets away from square boxes on a flat piece of paper. Boxes on a piece of paper do not show anybody anything except who reports to who, for payroll purposes. But you know you work for several bosses. You may work on several teams or several projects. Matrix organization, which is traditional graph-type arrangement, says that a person up here also works with this person here, and so on. This again is not multi-dimensional. It is possible to show an organization in a multi-dimensional form which is a very simple cubular crystal structure, not too complicated. If anybody wants to look at that, you are welcome to afterwards.

Nobody, not even Gretzky himself can describe how or why he is able to do the things that he does. You know why or how? Because he does not think about it too hard, he just does it. It comes naturally through intuition, through three hundred and sixty degree vision - all this chemistry all coming together and just floating in there. People cannot describe how this comes about. It is just a natural intuitive instinct that happens. Gretzky cannot describe it and the other great hockey players cannot describe it. It just happens... This is what has to happen in management. This is what the good managers do. They too, cannot explain how they are so successful. The Maple Leafs on the other hand are the epitomy of mismanagement. What do you have in the Maple Leaf hockey organization? You have an autocratic manager who is eccentric, who is also childish. This is his toy, this is his investment. The Gardens are full every week anyway so what does he care - apart from his pride that wants this tin cup sitting on the mantle shelf one day. But this manager does not have a clue, in a managerial sense, of how to go about getting that tin cup. And while that kind of management structure prevails in that kind of an organization it will never be successful. They switch horses so fast, crisis management just will not make it.
The successful business leader, as I have said before, has to bring the right brain into focus more often. We have to use more creative imagination. We have to remember that it is easier to think something up than to look something up. We have to give oddball ideas a fighting chance. We always say that a crazy idea will never work. We always think of all the reasons why something will not work, instead of saying why it will work. How can we make it work? This is where brainstorming comes in. Remember that every genius who invented something was a crackpot for at least two years until people accepted that he was a genius. You know the person who invented anesthesia would not be believed for two years by the medical profession. Here is a totally left brain profession that says, "**I don't believe that it will work**". This guy was cutting legs off, operating on people, and they would not believe that the patient did not feel any pain. We just get locked in the corner of our minds and say that this is the way the world is.

The medical profession today in North America will not accept that acupuncture works. People have been doing

it for thousands of years, with hundreds of millions of people...and it works. But this profession says, "**No that is not for us. It is too flakey. It won't work, because it does not have any basis in scientific fact.**" So we need a non-expert to come in, to open up their minds a little bit. So then holistic health starts up. A few doctors start joining in and some of these doctors start going to holistic health conferences. Now they are falling into this and claiming it as their own idea. This is fine as long as you convert people. It does not matter how you do it.

I want to speak briefly about what I call "transcultural management." I feel this is important in international organizations but also in national organizations. There is a problem in dealing with different cultures. We need an appreciation of the influences of cultural conditioning on

> People will search for meaning in their work, rather than denying their wholeness . . .

the management of both material and human resources. It is critically important that we understand that cultures think and behave differently. We are not all the same - out of the same test tube. There is different chemistry in each of us. Our native culture affects the way each person views the management process in all of its aspects from employment appraisal to critical decision making. What is acceptable in one culture may be verboten in another culture, calling for tailored approaches to management education.

We still have not learned this, even in our Canadian confederation. We are always putting each other down. The Easterners, the Westerners, the Quebecers and everybody is a hyphenated Canadian. We are all people actually living on one planet - never mind one province, one state, or one country. This realization is going to be driven home very quickly in the near future. To keep up with the trends that break through traditional barriers between different cultures, to take care of human needs on a transnational basis, and to develop new markets and services that contribute to a more poli-cultural society we need cross-cultural managers who know how to get this chemistry working. Managers who can tolerate cultural differences and who can get teams working together with all their strengths. Forget the weaknesses or the differences, the strength is in the differences. The different strengths that people can bring. This is why our country still holds together. This is why an organization holds together.

The Coca Cola organization last year got rid of an autocratic president. You might say another dinosaur bit the dust. The new chairman of Coca Cola, worldwide, is a Cuban, a nationalized American Cuban. Can you believe that. A Cuban is head of Coca Cola. He has appointed, in charge of Coca Cola USA, a Mexican. The person in charge of finance worldwide for Coca Cola is an Egyptian, and there are others. They now have a transcultural management team at the top of Coca Cola. The old ideology is finally being swept out the door.

Simultaneous international business relations can be improved in this way. Furtherance of worldwide trade and commerce, a sharing of rich nations with less affluent nations, and the cultural and commercial exchanges of the world's people all foster human prosperity and development. The contextural confidence which few of us, President Reagan included, have given much thought.

Another new competence, managers need in the future, is the sensitivity of the role of women in post-industrial organizations. Half of you in this room are female. You represent the outside population which I think is 51% female in actual fact. This is good. We have the perfect blend here of male and female and you are going to see this blend in every organization, eventually. And that can only be for the better. None of us should feel threatened by it. I will try and explain why. What we have to do is to come up with some way of avoiding ageism: "**You are too young; you are not qualified yet.**" Sexism; "**You are a woman, you will not withstand. You will not stay around long enough because you will get pregnant.**" How does a women get pregnant anyway? It takes two, right? But the woman always gets the blame and her career is over...

This corporate conservatism that I have talked about wrecks the corporate environment. These issues are going to arise more and more in the next ten or twenty years. The corporate world is not ready for the change in organizational psyche which is going to occur. This has important implications for training. I think we are already halfway there because of a natural thing which is happening. The business graduates who will be running most of the corporations in the year 2000 have already graduated from college. Close to half of them are women. In 1980, for the first time in American business schools there were more females enrolled in business graduate studies than men. First year students, more women than men. Now apart from the mathematical implications of this which are plain enough for anyone to grasp, there are subtler psycho-social implications. While business schools, in my mind, are severly lacking in terms of the real value of their curriculum, they are very left brain. At least they are providing an

atmosphere where young business students of both sexes can explore case studies together. I have all kinds of problems with case studies. Case studies tell you how to solve something back then. They do not tell you how to solve a new situation. But at least students working together, male and female, learn teamwork. They learn respect for each other regardless of sex. It becomes subconscious and as these people work their way into organizations they are going to change the organizations. It will be slow because as soon as they leave the school they are entering again into a paternal system which has been set up by men. The male student is going to have a easier time adjusting, maybe, than will the female student. But, I think, will find the adjustment eventually a little difficult. But as the chemistry of the water changes in the organization, more and more can be poured in. Eventually it will change and it should be easier for both to progress up the corporate ladder together - based on ability not on anything else.

Now the implications with this go beyond the simple mathematics. We all know that men and women are different. They are biologically different. We are also different, a little bit - upstairs. The latest research shows that male brains and female brains are structured differently. I do not want to open up an emotional topic here like intelligence in race. We are talking here about intellectual capability of male and female per se What I am saying though, is that the male head is more differentiated left brain and right brain. Based on research, the women's head is not so differentiated and is more intermeshed. Part of this way of thinking is not just genetic and biological, some of it is also cultural and social. (i.e. the way that we have been brought up, the roles that we have to play).

Nevertheless, I feel it is important that we learn how to tap the unique abilities of male and female in terms of their creative ability for decision making and bringing different skills to bear. Women are usually more intuitive - we are always talking about a woman's intuition. A woman can sum up somebody just by looking at them, and say "**he's good**" or "**he's no good**" or "**there's something I don't like about that person.**" But they cannot explain why. They cannot verbalize it. Often they turn out to be right. Now more and more men are getting the same ability, the ability to rely on intuition. Now almost every decision I make is based on intuition. Believe it or not. You learn how to fly with that. And most successful top managers, even some of the male turks, run by the seat of the pants. They do not run by what was taught in business school or text book formulas. It is gut feeling intuition - does the situation feel right and so on. Gradually the more successful you are in trusting your intuition, the more successful you are at placing confidence in that ability to make decisions.

So we must try to bring these two kinds of skills together. The logic of the man - action and dynamics, with the slower thoughtful intuitive process of woman. Why do they have better accident records? Because they behave differently. It is the same in the organizational environment. A woman has a better long term view - more futuristic simply because of the child bearing instinct in the genes. And I believe that the successful compromisers today, even if they are male, have that long vision. We need more of that feminine skill brought in.

We are going to learn from each other, what our unique abilities are, and bring these skills together. The better that we can develop this in the classroom the better it will work in the organization world as well. This is what Barbara Marks Hubbard, another futurist, calls "co-creative super sexuality". This goes beyond the sex differences. It can be a co-creative function - the organization or the idea or the project that you happen to be working on.

> Creativity and commitment is what a business organization should be all about.

I want to close with some discussion on what I see as a new work ethic, because I think this has some implications also. We have encouraged the disintegration of the work ethic into a mere job ethic in the industrial age. This is what I talked about earlier. We have responded to demands for jobs and have neglected the human need for meaningful work. As a result many of us, managers included, come to work concerned with getting as much compensation as possible for doing as little as possible. This psyche is changing and psychic income is becoming more important than dollars and cents, in terms of recompense for work. Management and management educators have to redesign work so that it permits people to derive meaning from their jobs - the ability to test their talents and the ability and the openness to grow. Everybody wants to grow in an organization. This is what life is all about. We have to provide the soil, the fertilizer, the compost, and the water to enable people to grow in organizations.

The new work ethic will be one of committment rather than one of self-denial. People will search for meaning in their work, rather than denying their wholeness by selling out or renting themselves out, to perform meaningless tasks. This attitude is threatening to the old

style of autocratic management. But it could provide a vigor that will result in the productivity improvement that we have all been crying about. This new ethic could strengthen our economy, rather than destroy it, if management responds positively. This new ethic could provide the vigor that will bring both material gain and quality of life improvements, if properly managed. The search for fulfillment would be conducted primarily in the realm of producing rather than in the fantasyland of consuming, which is what we have been doing.

People want to combine their new found freedoms with something to which they can commit. Everybody is looking around for organizations to join. This is what the Aquarian Conspiracy is all about. We are all searching for meaning in our lives, which the organization should strive to provide. Otherwise people will look somewhere else. This means that we will be neither passive workers nor workers that have self-denial days, nor the irresponsible workers interested in an instant gratification, if we can provide real meaning and substance in what they are doing.

> In the end
> it is how we apply
> our training technology.

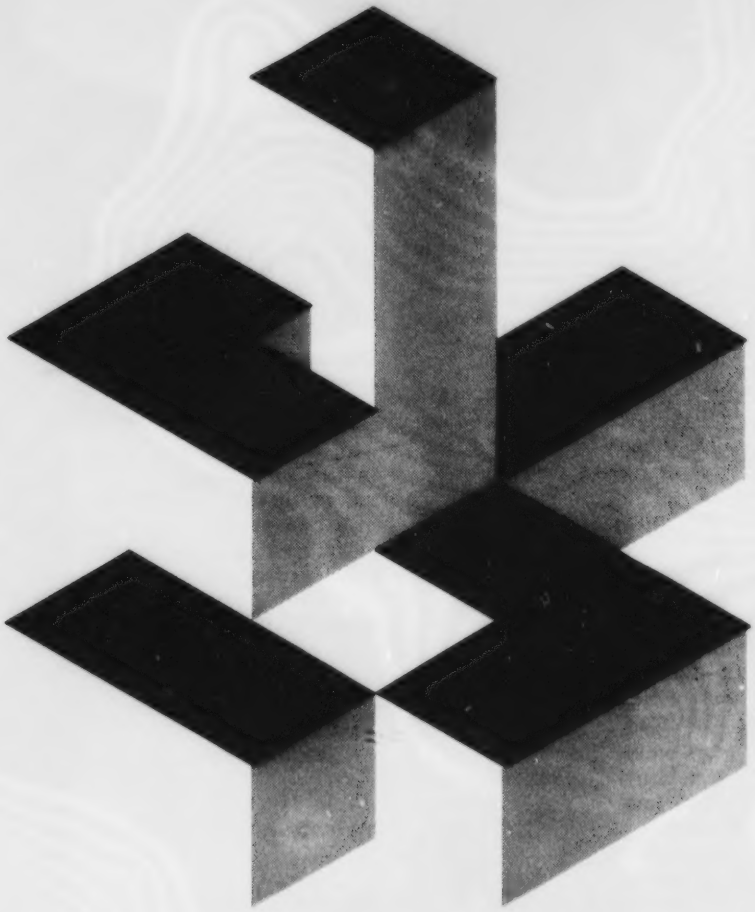
So I see the evolution of a work force of interested and active individuals but management must present these people with organizations and jobs that capitalize on this new work ethic. When management responds to peoples' desire for greater responsibility, achievement and a say in decision making - we can get creatively committed to the common purpose. This is good, not only for the new workers but for the company. Creativity and commitment is what a business organization should be all about.

There is also evidence that people will embrace innovation and new technology if they are part of an open ended creative work place which they feel they have some say in shaping. Japanese success is not the result of superhuman top management or superhuman middle management or superhuman engineers but a super job of getting everyone involved. If anyone has ever been to a Japanese plant, even in North America, the teamwork really shows. It would be a mistake to try to copy just this part of the picture. I am astounded at the amount of training that goes on in Japan. I think the business audience has got to be brought to bear and they must work with the educational community to produce the kind of people that are required. Business and industry cannot expect the business schools, community colleges, and vocational training centres, to do the job all by themselves. Business should be involved. We need more practicing managers in the educational environment and vice versa. You know I would say 80 or 90% of the people on business faculties have never spent a day of their life in an organization making a real life decision. So how can they expect to train anybody else to do that? I met last week with the former chairman of American Can Corporation, William May. Despite an extremely successful corporate career he has gone back to the business school because he is so concerned about this. He has become chairman of the Business Faculty at New York University, with a commitment to train better managers for tomorrow.

By the nature of broadly defined jobs we should provide for rotation of duties and different skills. This is what the Japanese are doing. So there is a lot of talk about how they cobble people. This is just a typical American put down. You know if the North American cannot do the job right then somebody else has got to be to blame. It is no good saying that we cannot sell our cars because Japanese cars are better. Sure they are better. This is why we cannot sell our cars. Do not put blame for your problems on someone else's success. Learn from their success instead of putting it down. We need to take a positive view of people and what they do. People want to be on a winning team. We should help them to become part of that winning team. We will see creative solutions come to the surface very quickly. This requires an organizational climate in which people can exercise their skills and develop new ones.

You know, as I said, goldfish cannot survive in polluted water, we must provide better organizational water. We must provide better water within the educational system. The unleashing of people power is what it's all about - letting the creativity come out of people. We all have a tremendous potential inside us that we have been told to keep inside by the left brain system. We need to allow it to come out and fulfill itself. This is the opposite to what alot of managers do in terms of trying to monopolize power. It is the smart manager today who knows how to share power. We have to share power and not be concerned with accumulating it.

Just one thing more, if in this swirling change the need for tougher resolutions and new strategies is a little overwhelming for you, if you feel all alone in wanting to change your behaviour and your organizations, keep in mind that others are changing. Everybody in this room is changing. Everybody next door is changing. This is what people are looking for that they have not been able to find in their traditional organizations. We must find



this meaning for people, turn people on, unleash their power - not only for the young newcomers to management, but even those who have been around for a while and are struggling in this tough war inside the organizations. Today's managers want more for themselves but they also want more **from** themselves. They want to give not just take. This is the new open style of management that is required. We want to keep our eyes on the horizon. We must be futuristic to be able to see what is happening in the real world. We must not loose sight of the bottom line, this is our life blood. But we have to set bold new strategies. So what bold new strategy can we have for the vocational educators. Everybody in this room can think up at least half a dozen in a few minutes, if you just think about it. When you go away from this conference, over the weekend, next week, stop and think. There is not enough thinking going on. There is far too much doing in this world. Think about what you have heard. Think about what other people have said to you. Think, what does this all mean to me in my job? What can I do about it? How can I change things here in my life, in my organization's life? And let us see if we can get a commitment to a new form of management.

This is the way that we structure our companies, so that we can develop managers. In the end it is how we apply our training technology. How can we do it better? It is not an easy challenge to live up to or to face up to because it is a tough world out there. But given the reality of people's abilities and aspirations and given the reality of our own competitive position in a global economy, it is one we cannot live without. There is another question we have to ask finally. What do we really know about managing, and about managing tomorrow? I think this is perhaps all summed up in the perceptive answer of an American chief executive officer who was asked what he worried most about in his job and he said, "**The thing that worries me most is what my people do not know that they do not know**", and he added, "**on what they know that they do not know, they will spend so much time and effort to find the appropriate answers that what they do not know that they do not know...,**" and he left the sentence unfinished. □

G. ALEXANDER

Trades Education Tomorrow ~ Industry

It is fitting and proper that Alberta is the location for such an in-depth study of the future for education and training and in particular training of technical skills. Because in construction, a prime user of those skills, Alberta is the leader in volume of construction being done and Alberta is the leader in technical innovations relating to the building process.
This is a result of the interest shown in our tar sands technology and the potential of our petro-chemical industry.

These two sectors brought a great deal of research and development capital to our province.

Money became available for the construction of new plants, new transportation facilities and the social and commercial establishments needed to serve a rapidly growing population.

In 1981 Alberta contractors did 25% of all construction in Canada.

Dollar value for construction last year was 13.6 billion.

Our growth is attracting contractors from all corners of the world and our province has become a base for Canadian operations of a number of international consulting engineering firms.

This growth and the calibre of firms doing business here now places Alberta in the forefront in creation of new techniques and materials in the building industry.

This poses a special challenge to the educators of the construction tradesman and the construction technologist.

By adding such expertise and human resources to our bountiful natural resources it has become possible to initiate a mega concept and bring it to the construction stage in a very short time span.

Environmental and engineering studies for a multibillion dollar industrial plant can be completed in iess time than it currently takes to train the skilled tradesmen necessary to construct the project.

From an economical point of view this is an envious position to be in but from a practical standpoint it forebodes tremendous pressures on our technological institutes and their staffs.
The pressure will come from two distinct sources: the numbers of skilled tradesmen and technologists requiring training and education, and the necessity for continual updating of information required to keep pace with the changing technology that stems from the progressive philosophies of the corporations doing business in the province.

Looking at Alberta's construction manpower from the standpoint of numbers we are currently at a very fine balance point.

During those periods when a number of projects reach a similar stage of construction at the same time we experience temporary shortages in some of the trades.

Even while I am talking to you today there is a very heavy demand for good pipe-fitters and pressure vessel welders.

One does not need much of an imagination to determine what will be expected of you within two years of the start up of one or more of the impending tar sands projects.

But it is the area of changing technology that is the cause for greatest concern.

Generally those responsible for decision-making in technical and vocational education have priorized immediate problems, a luxury no longer permissible in view of the rapid flow of information and technological

innovation directly attributable to the computer.

We were complacent even though our scientists, our industrialists, our philosophers and our governments had cautioned us to be alert to the changes that are occuring and will continue to occur in productive society.

A prime example of ignoring the future was seen in our change-over to the metric system of measures.

Construction is almost totally metric with 100% of all provincial and federal government projects and about 60% of all private sector work being designed in metric; yet our technological institutes have been slow in converting to the teaching in metric.

Research institutes, industrial corporations and manufacturers of computer and communication hardware constantly demonstrate the trends of the future but educationalists tend to overlook new applications until industry has already adopted them. This practice is not wise in this day and age where the time span between discovery and use of new products grows shorter almost by the hour.

The trend is very obvious. It was about 112 years after discovery, before photography was used commercially... 56 years passed between discovery of the telephone and its commercial application... the radio took 35 years ... 15 years for radar ... 12 years for television but only 6 years for the atom bomb to become operational and a mere 5 years for transistors.

Now we have a silcone chip that increases computer capacity millions of times and reduces testing time of new theories and products from years to weeks and in some cases days by means of simulation.

Philosophers and theorists can call on the scientist to put their findings to test immediately.

You as educators must also revise your theories and practices to adapt quickly to this new technology.

Government and industry have provided you with fine new buildings ... and made available the latest in teaching tools ... but there appears to be a reluctance to change the process of education itself.

Industry is demanding that you make a change and to put this in the language of industrial technology, you must develope the "software" to properly utilize the "hardware" available to you.

But you cannot isolate yourselves to deal with this problem. Practical solutions can only be achieved through joint effort with government, industry and labour and this is where Albertan's have a head start on our sister provinces. In my opinion we have the best apprenticeship program on the North American continent and this has been so because of the cooperation of all parties involved but we must fully support this concept and streamline its communication processes for our apprenticeship system will certainly be put to the ultimate test as we enter the era of the mega-projects in our mega-province.

We have reached the point in our industrial development here in Alberta where automation and the high degree of specialization in the work force has made on-the-job training inefficient and in some cases impossible.

Industry has neither the time nor the facilities to properly train its technicians therefore we have assigned the task to you as one of the partners in our program. You must provide our workforce with the broad educational base it requires then industry can "fine tune" the skills in the field.

This form of joint effort provides the Alberta apprentice with the "best of both worlds" but it does not address the problem of time. This is where you must adapt to new teaching philosophies and new classroom techniques.

Mass processing of technologists with no loss to the quality of instruction to the individual is your challenge. A challenge compounded by the diverse interests, backgrounds and abilities of the students you must work with.

Industry has accepted its obligations to society and now provides a place in the workforce for our handicapped and it has modified traditional male dominated positions to allow entry of the career woman.

You are expected to accept these new groups with absolutely no change in the time framework and looking to the future you will likely be expected to implement an actual decrease in training time. To do this it becomes necessary for you to use the same tools that industry is refining for itself. Tools such as closed circuit video, inter-active video, fibre-optics communication networks and tele-conferencing, to name only a few.

But to be successful all of these considerations must succeed within the framework of our economic cycles. The "boom-bust" syndrome of Canadian economics creates sporadic manpower shortages and periods of high unemployment simultaneously in the various industries and in the various geographical regions.

Notwithstanding the social implications of such an unpredictable system, apprentices face the possibility of having their education interupted and in some cases displaced yet they will be expected to understand and use the latest of technologies when they once again enter their chosen occupation.
Your challenge here is one of maintaining continuity of training even when the training period is interupted.

A further challenge to tomorrow's educator is developing specialized training in education at the same pace as specialization of the productive society.

> Another threat to traditional function comes from micro-miniaturization

Your final challenge, one which I view as the most difficult, is that of predicting future needs. The people you are training become significant in economic life only if they are members of an occupational group that is making distinctive contributions to economic society and this can not happen to an individual who is trained for an obsolete trade.

Computer technology increases the probability of obsolescence. Numeric control has displaced many machinists, metal-workers and welders.

The computer is far more efficient in taking over jobs that require precise manual manipulation of material objects.

The computer can shape, align, and join metal, plastic and other materials much more accurately and considerably faster than a technician and usually with less waste. Not only can it work more efficiently but the new computer can also provide its own maintenance. It can without fail tell when it needs new drills or cutting edges actually carry out the replacement function itself. Maintenance by humans becomes minimal.

Another threat to traditional function comes from micro-miniaturization. Computers no longer require specially designed rooms with cooling systems; they no longer weigh thousands of kilograms or are large enough to fill a big warehouse; as a result more and more businesses are installling computers and programming them to do things that as recently as last year we thought impossible.

But miniaturization has other ramifications for the skilled tradesman. Electronic components for many machines no longer need highly skilled servicemen to carry out repairs, simple replacement of a modular component can be carried out by anyone and the up-to-date computer even tells you which module needs replacement. This innovation affects the mechanic, the electrician, and the plumber among others.

But computer technology is not the only cause for obsolescence of tradesmen. Development of new building materials, for example, has practically eliminated the plastering and stucco trade and development of new machinery requires highly specialized operators. As an example, the pile driver has become so sophisticated that it can no longer be left in hands of just any operator and has reached a point where owners of these machines now called vibratory hammers must send their experienced operators to the factory for retraining.

I want to conclude my talk with a quick glimpse into the crystal ball and give you my view of the construction tradesman five or ten years down the road.

I hesitate to look beyond ten years when discussing the future simply because the rate of advance in technology during the past five years indicates a possibility that by the year 1995 we could have an industrial society totally unimaginable to us today.

Within the past two years design computers have come on stream in Edmonton. These computers carry out the drafting function in more precise detail than I ever thought possible. They go so far as to reproduce images from any angle including three dimensional perspectives. They select the appropriate materials for the structure and do the quantity and cost take-offs at the same time. All information required can be printed out in hard copy, or if further changes are contemplated the images can be projected onto a screen for further study. These images can be of the total structure or a minute detail blown up to a scale many times the actual size.

A designer's function in these offices becomes one of improving systems information rather than traditional problem solving. The architect and engineer now design systems which design the actual structure. The computer manipulates the total mechanics of designing, leaving only the aesthetic aspects to the designer. This innovation has tremendous impact on the educational needs of the architectural, engineering and construction technologist now being educated in our technical institutes.

Taking this design technology one step further we can see many ramifications for field practices of the construction tradesman.

By communications link to the design office using telephone and its fibre-optics applications it becomes possible for a person on the job-site to call up immediately any detail he may require directly from the design computer and he can ask for his information on a screen or on hard copy.

Shop drawings and as-built drawings can be transfered directly and immediately to the design memory bank by means of the electronic graphic pencil thereby allowing the main computer to immediately make adjustments to all other aspects of the structure that may be affected.

> Yours is a vital role in our economic future... Our graduates must be flexible.

I would suggest that a necessary skill of all construction tradesmen of the future will be proficiency at the keyboard and skillful use of the electronic pencil.

Cutting and shaping skills of tradesmen will have low priority as **modular construction** components become commonplace, a distinct possibility in the near future as a result of computer design and computer control over production facilities.

I suspect that in the near future electrical and plumbing components will consist of pre-fitted circuits and systems which require only placement by the tradesman in the field.

You as educators must be concerned for the social impact of such technological advances and prepare the skilled tradesman with required knowledge that will allow him to move from one field of endeavour to another. The knowledge base for construction tradesmen will have to be more general but the specialty knowledge about their particular vocation will have to be even more precise and current.

Tomorrow's tradesman must be flexible within his own trade group. He must have an adaptive-type training in basic math and science and will require an extensive understanding of the fundamental skills of communication.

He must have as good a knowledge of the "why" as he does of the "how to".

You will assume a new responsibility in this world of the future. You must continually revise your educational standards and teaching techniques at the same pace as industrial progress but more important you must never underplay your role in preparing human beings for the future world and the future in the world of work can become very unstable for many traditional tradesmen.

At our present pace it becomes entirely possible that the mechanic with special skills to repair electronic carburators may never see a carburator in a car after tomorrow.

But you must never consider advancing the educational process in isolation. As technology advances so does the importance of total social input to the educational system.

We in Alberta are fortunate for we already have the mechanism in place and functioning effectively I should add, in our apprenticeship system. You must accept the importance of the input by industry, government and labour when modernizing your processes. Certainly we understand that the volunteers who sit on the advisory committees are very limited in their knowledge of educational systems, curriculum theories, or problems of the educator but you must rely on their experiences and knowledge to ensure that you do not prepare your students for full time unemployment.

The business man can help you establish the fine balance between supply and demand in a technological society.

Yours is a vital role in our economic future here in Alberta, but you must play your role in light of the ever changing rules.

Our graduates must be flexible. They must be prepared to move from one job to another within a cluster of jobs. They must be prepared to accept the fact that their specialty may not be needed tomorrow.

A tradesman who trains himself too exclusively runs the risk of finding his learned skills outmoded perhaps even before he has mastered them.

In other words you must accept the responsibility, in preparing for tomorrow.

- prepare graduates for competance in a clearly identified occupation or cluster of jobs;

- serve the needs of business and industry for personnel in our specific sector of geography;

- provide instruction in the skills and technologies of specific business and industry dominating in Alberta; and

- serve vocational and technical educational needs of employed adults to improve their present competance or enable them to adapt to changing needs of business and industry.

- You must train students to realize the importance of productivity.

I have been involved as a representative of the business sector in the apprenticeship program for a number of years and I am firmly convinced that we have the best system of any in Canada or the United States. I am also convinced that this is so because of the cooperation between all parties to the program and the open and positive communications between the participating sectors of our economic society. To ensure we keep our program successful into the foreseeable future it is imperative that we maintain these free lines of communication and adequate liaison between us. We look upon you as the experts in education. You have the expertise and the resources to study the future, we have the knowledge of social and economic need and the current forecasts of technological change. Between us we can maintain a flexibility of philosopy and ideology that will keep our educational processes in step with industrial progress.

Successfully meeting the challenges of training tradesmen in a mega-province is directly related to our capacity to absorb new technology as it develops and our willingness to work with others to apply the new found knowledge in the continual evolution of our educational system.

We must never lose sight of our purpose which is to train our workforce to meet the needs of industry at any given point in time. □

KEN CLARK

Trades Education Tomorrow~Industry

As an introduction to my discussion of the types of training, changes in training needs and training methods for tomorrow's industry, I would like to describe my involvement in the construction industry.
For over thirty years I have worked in the industrial sector - which is the one that builds refineries, power plants, pulpmills, chemical plants, etc., that process raw materials on a large scale. It has become common practice these days to call them mega projects when they are big enough.

In Canada the industrial sector differs from the commercial and residential construction industry, which is built by a combination of both union and non-union labour, in that it is essentially totally unionized. Other related specialized construction industries are pipeline building, mine construction, road building and dam construction. While there are many differences in all these types of construction, the one thing common to them is that the majority of skilled workers, whether union or not, are all trained in the same way -- through apprenticeship training.

Before moving to future needs, I would like to discuss a little of the past and present in order to illustrate some of the changes I have seen in our industry and its affect on training and apprenticeship.

Past

Years ago, the industrial contractors did not employ any apprentices and like many other industries, it operated on the principle that construction work was a "temporary occupation". This had many implications and some of the more significant ones were:

There was a surplus of skilled workers available whenever they were needed.

The contractors and society had no responsibility for between jobs.

Somebody else trained them.

At that time, the large projects were much smaller that they are today. For example, during the first half of my career, the average length of the construction periods was about a year -- it actually varied from six or eight months to eighteen. We built our field office on the work site, brought in our construction supervisors and engineers, and called the union hall for the craftsmen we needed. The work force on the project would go from zero to a peak of from two hundred to a thousand or more, made up of 14 or 15 trades, and back to zero again during that period. We packed up our tools and equipment, paid our bills, closed our books, tore down the office and moved across the country and repeated the process again. Pipelines are still built that way except "The Spread" as it is called moves across the country as the line is installed. It was not a conducive environment for indenturing apprentices!

About ten years ago, changes began to occur that affected our industry significantly.

The number of industrial type plants increased substantially.

More construction workers were needed to meet the increased demand of industrial construction.

The plants became larger, not only in size but also in complexity and the construction schedules became longer.

As a result of these changes, we began to experience significant shortages of skilled labour.

At this time, it may be appropriate to discuss the experience of the Syncrude Project in this regard.

The majority of the shortages at Syncrude were filled by

skilled tradesmen from outside Alberta where there were surplus workers available and we also began to use apprentices. The numbers varied from one trade to another for various reasons, and some trades had little participation in the apprenticeship program. At the same time, significant advances were also made in introducing women and natives into our work force with some becoming apprentices.

This change happened for several reasons -- the project was so long, roughly five years; there was a shortage of labour; and the project was in a remote location.

However, the long term results were not entirely successful:

In our boom and bust economy, many people did not remain in the construction work force.

Some apprentices do not get all the variation in work that he/she should.

Turnover was a problem in the program - the average time that all workers spent on the job was four months, although many returned more than once. Again, it was still not the best situation to indenture apprentices.

The predictions then were that the construction industry would face increasing shortages of skilled craftsmen because of the increased number and size of the projects, because of the decline in the labour force, and because of the change in its composition with the male component declining and the female component increasing.

Our experience clearly showed that future large projects that occurred during periods of high employment would have to maximize the use of apprentices and would also require extensive training courses both to prepare people for training and also to upgrade existing skills. These trainees would include increased numbers of people from the target groups.

However, that was the situation last year, before our Federal Budget -- and things have changed again. For the near term, we are once again in a surplus labour market. The improvements we talk about making to forecast demands, to improve apprenticeship training and to provide opportunities for the unskilled women, natives or disadvantaged into apprenticeship training during the next few years will be increasingly difficult to accomplish.

Also, the construction trade unions are extremely reluctant to increase the numbers of apprentices entering the work force if they are not convinced of long term economic growth.

Having said all that, what about future training?

I believe that the basic work that we do will not change significantly in respect to the majority of the plant construction. We will dig holes, pour concrete, erect structural steel and install piping systems in much the same way as we do now although some changes will be made in the tools or techniques to make the work easier or faster. The one exception to this, of course, is in the area of electronics, communication and control systems, which are changing daily.

There will also be changes in the erection methods through the greater use of pre-assembly and modularization, that is, more assembly in central shops instead of traditional piece by piece assembly at the jobsite. I would, therefore, see little need for change in training needs except for these innovations.

However, we must utilize the time we have now during this period of low demand to develop a better system to predict our needs in all trades. It is evident that in order to intelligently plan for the required number of future workers, we need a system to predict the supply demand

> ". . . we cannot reduce the quality of our training, we will need skilled people . . ."

picture on a national basis for all construction. This is most difficult to do even for an individual industry, let alone on a regional or national basis. After doing this, we then must better advertize and publicize the needs and the advantages of the construction industry to the people entering the work force, including the young people, women and natives. Then they can make a conscious choice of a career in construction rather than doing it because they can't find any other work, which has usually happened in the past.

Industry as a whole must assume more responsibility to see that the apprentices get the training they need to become skilled tradesmen. There is no substitute for on-the-job training. Our current training facilities are becoming overcrowded and we must find ways to level out the training periods throughout the year.

There should be more emphasis on teaching management and inter-personal skills, our productivity

Continued on page . . . 52.

EARL MANSFIELD

Trades Education Tomorrow~Apprenticeship

Total registration of apprentices in the 5 years from 1976 to 1981 increased from 13,000 to 28,000, a little more than double. Depending upon the economy, a projection of this relationship suggests that Alberta may see some 50,000 apprentices in training by 1987. The increase in apprenticeship activity has necessitated the installation of an Electronic Data Processing System for more efficient processing of documentation and school course notification.

Educational levels of apprentices is increasing:
In March, 1971 - 41% of apprentices - Grade 10 or less;
In February, 1982 - 20% of apprentices - Grade 10 or less

Rapid changes in technology and materials used requires frequent updating of programs (Communication electricians an example):
Makes heavy demands on institutions and instructors ;
Formal upgrading programs can be seen as a requirement for instructors for both technical and job skills.

Women in apprenticeship:
Women seldom entered apprenticeship programs until recent years;
Over the past 3 years the numbers of registered women apprentices has escalated from a few dozen to 588 as of February 26, 1982. (Does not include those working on apprenticeship certificates in the trades of beautician and barber);
Women are registered in 24 different trades.

The trades employing the largest numbers of women are:

Partsman	166
Cook	83
Electrician	55
Communication Electrician	45
Welder	39
Carpenter	31
Painter & Decorator	28
Baker	29
Cabinetmaker	26

Those women who have achieved certification, as well as the apprentices, are reported to be well received in the trades, with most employers willing to expand their hiring of women. Future prospects appear to include an expanding role for women in trades.

Pre-employment courses:

To date some training institutions have offered courses to assist women in their orientation to trades training. Increased attention to this endeavor may well encourage a greatly expanded presence of women in the trades.

New Trades

Boilermaker & Ironworker
These two trades were originally merged with steel fabricators in a common program. With the new designations, as separate trades, both are now developing and implementing separate programs.

Sprinkler Fitter
The program has been developed and is in operation. First graduates will leave the system in the next few months.

Transport Refrigeration Mechanic
The program has been developed, apprentices are being registered and courses of training have commenced.

Printing and Graphic Arts
The committee structure is in place, work is proceeding on the program and development of regulations; apprentice registration will commence when the regulation is enacted.

Trades Showing Interest in Designation

Recreation Vehicle Mechanic
Sawfiler
Tool and Die Maker
CNC (Computer Numerical Control)
Cement Finisher
Warehousing Clerks
Meat Cutters
Fire Protection Installers
Metal Cladders

Trades in Decline:

Plastering
The apprenticeship enrolment declined so badly in this trade that technical training courses are no longer offered. The program operates only as a voluntary certification program at present.

Floorcovering Mechanic
Enrolments have dropped considerably in the past few years. The program has recently been revised with the hope that it may encourage greater utilization. Employment practices in the industry appear to create obstacles to an effective program. Courses are still being offered, marginal attendance.

Electronic Technician
The increased serviceability of equipment has limited the amount of repair and rebuild work required;
The number of new apprentices required is declining;
Technical training courses are still being offered;
The decline may be reversed if economic development and expansion show marked increases in the next few years.

Non-traditional Trades

Partsman was considered to be a radical venture when designed in 1966
Very successful program - 655 registered at present and continuing to rise;
Female participation - the greatest of any designated trade, 166 at present (25% of total).

Apprenticeship is adaptable

Can be adapted to occupations where an acceptable mix of experience and technical training is required of workers. How many more occupations might achieve the progress of the partsman trade? It is to be hoped that more will give it a try.

Potential For New Trade Programs:

Many areas of endeavor either not served at all or only in part:
(1) Business Occupations
(2) Forestry
(3) Mining
(4) Manufacturing
(5) Process Industries
(6) Transportation (Particularly air and rail)
(7) Service Industries

The System and Policy

At present the system is geared to providing programs requested formally by industry (a reactive process) Does the future for manpower development for Alberta include a change in the process to include governmental research and subsequent promotion of trade training where that research shows needs exist?

> Could the educational system in Alberta respond adequately . . .?

Would industry (Management and Labour) support programs as well if the Apprenticeship and Trade Certification Board and the Branch took the initiative and promoted programs, as suggested above?

Could the educational system in Alberta respond adequately if the number of trades involved in apprenticeship were to increase dramatically and the numbers of trainees to multiply several fold?

New Methods of Instruction

The use of new instructional technology to improve efficiency in the learning process is being studied and pilot projects are being launched, (e.g. trade of electrician);
Progress is desirable and changes should continue to be introduced as necessary, as they have been in the past. However, any such changes should be made cautiously and only after full and proper consultation with the participants. Unless those in industry, whose program it is, concur, suddenly introduced changes (no matter how well conceived) could be more destructive than helpful. A reasonable rule to follow for any program as complex as apprenticeship is, **"If it is working, don't try to fix it."**

C. J. CONNAGHAN

Industry ~ Business and Tomorrow

A new civilization is emerging in our lives, and blind men everywhere are trying to suppress it. This new civilization brings with it new family styles, changed ways of working, loving and living.
Pieces of this new civilization exist today, millions are already attuning their lives to the rhythms of tomorrow. Others, terrified of the future, are engaged in a desperate, futile flight into the past and are trying to restore the dying world that gave them birth.

Whether or not one totally agrees with these words written by Alvin Toffler in the opening of **The Third Wave**, they do convey a sense of the stirrings of change that industrialized societies face as they approach the twenty-first century.

We know we are in the midst of far reaching changes, it is not too soon to discover the early forces of change and the general characteristics of the new direction. Change, as we know, can creep in as quietly as an evening breeze and become established before we are even aware it has taken place.

The more fundamental institutional changes are shaped much more slowly. To discover indicators of change we have to examine certain trends and their consequences.

Suddenly however, in the last 20 years we've become aware of the problems facing highly industrialized societies. These problems range all the way from environmental concerns, urban renewal to high unemployment and inflation.

Change is not new. However, we are living in an age when the momentum of change has reached a dizzying speed, attributable directly to technology. Man is tied to change -- he can't avoid it. Change suggests movement, excitement, action. Change can also produce chaos.

What to people of my generation was momentous change is commonplace today. In fact, today young people crave change as a way of life.

The changes I wish to discuss may seem relatively small but within their own context they will play a crucial role in determining the life style, motivation and satisfactions of current and future generations.

Over the next two or three decades both management and labor, as we now understand these designations, are going to be challenged in a way we have never realized was possibe. It will be exciting, but it will also be a traumatic and difficult time for those of us who do not adapt.

The 1990's - that's less than 10 years away. Hardly a comforting thought for those of us born in the first half of this remarkable century.

To properly contemplate the future of one facet of our society, such as the work-place, requires that it be considered in the context of what that total society may look like 10, 20, 30 years from now, because the work-place is influenced and shaped by the environment and attitudes of the day.

And so one's view of industrial relations of the future cannot help but be colored by one's expectations for society as a whole.

Apart from the broader social changes that have been occurring at an unprecedented rate, we see all around us every day the ever-increasing impact of new technology - the impact of automation on the amount and kind of employment that is required, changing drastically the old **work patterns**, the **skills** and **educational requirements**, even the very identify of the **job** and the **person** performing it.

Where is job security if today's job won't be there tomorrow? This and other difficult questions further complicate our labour-management relationships.

I would like to separate the three major elements within the work scene, and I trust you will recognize the difficulty of preventing a certain amount of overlapping and repetition.
Because obviously when one talks about the nature of work, or workers or unions, or management, one is frequently dealing with influences, pressures and circumstances that apply commonly to all three.

The Work Place

The work place of the 1980's is undergoing change at an accelerated pace.
We have seen the employment load shift from the primary and secondary industries to the service industries and their off-shoots. We only have to look to our neighbour to the south to find that the service sectors account for more than half the total employment and more than half the G.N.P. The major portion of workers in the United States is engaged in neither agriculture nor industrial pursuits.

The trend is clearly towards white collar professional and technical occupations. The growth rate for scientists and engineers has been three times that of the U.S. working population. Where the semi-skilled worker was once the backbone of the industrial complex, the white collar technically-trained employee is emerging as the backbone of the modern work place.

The relentless impact of the computer on the contemporary work place is well known and requires little comment. The extent of the impact, however, is formidable. Work in banks, retail stores, airline offices, regular business offices, steel mills, automobile production plants has been affected by the computer and its technology.

One of the main symbols of this electronic revolution is the word processor, with its long-range goal of fostering the paperless office. It is a short step from the present level of office technology to the fully automated office where information is filed and processed electronically with little human involvement.

We have been warned that typing will become an obsolete skill as speech recognition machines arrive. These will be capable of capturing the distinctive accents of spoken words and converting them into written words. This will entirely by-pass the typing operation. There is some evidence that the Japanese have already developed a machine which recognizes Japanese words. An English language version is probably 2 to 3 years away.

Work place life styles will also be affected by the electronic and computer revolution. Apart from encouraging smaller work units, and altering the actual character of work, it is possible that numerous jobs will be moved from the office and factories into the home. Yes, the home.

Studies have shown that work in the electronic and pharmaceutical industries do not have to be carried out in the office, laboratory or shop. There is already clear evidence of an unmeasured amount of work being carried on at home. Salespersons who work by phone or visit: architects and designers: specialized consultants: investment counsellors; human service workers,

> "... merit will reign as the only qualification for advancement ..."

insurance agents and lawyers. The list is lengthy. It is possible to speculate that the emerging electronic office will evolve to the point where many of the duties of secretaries could be completed at home, as well as at the office; as could many of the tasks performed by draftsmen.

The provision of low-cost work stations in the home, providing a small typewriter-word processor, along with a computer console and teleconferencing equipment, could radically extend home work.

The time spent at work is also being changed. The traditional 9 to 5 work cycle has been eroded. It began with the advent of flex-time in the 1970's, which allows workers to choose their own working hours within prescribed limits.

In addition there has been a dramatic spread in part-time work. The part-time work force has been growing rapidly and a 1977 U.S. study suggested that in future almost all jobs could be part-time. This approach will be particularly welcomed by women, the elderly, the semi-retired and the young who wish to follow other pursuits.

As technology develops the more repetitive, monotonous and unsafe work will be taken over by robots in much the same way as in Japan, where more than 50% of the world's robots are employed.

The Worker

I am sure you will agree that the young worker of today, along with his kid brother and sister still in elementary and secondary school, will have an unprecedented influence on the shape, not only of tomorrow's working conditions, but on the whole philosophy of work.

We see it already.

Into our rapidly changing work environment pour thousands of young people, most of whom, contrary to opinion expressed by some of their elders, want first of all a job, and who can blame them if they prefer one to which they can attach at least some meaning? They are better educated than were their parents and grandparents, and they are frustrated by the absence of challenge in most of the jobs available to them. They are influenced by different value systems, and they pose problems for **both management** and **unions**.

Since most of us are of a generation and background that was pretty thoroughly indoctrinated in the work ethic, we have difficulty embracing the counter-culture of youth in its extreme forms. But, it isn't hard to understand the trend toward a serious questioning of the work ethic.

As different value systems emerge, so too will emerge new demands, involving philosophical collision, to this will be attributable many of the labor relations problems we'll face in the last decade of this century.

Increasingly, young people in the work force are expecting a great deal from their work. They demand to make a real contribution and rapidly. They're less interested in long-term betterment. They're looking for job challenge and they're looking for advancement.

Ultimately, one can see a system in which **merit** will reign as the only qualification for advancement against the heretofore heavy emphasis on seniority. Can you imagine the resistance this trend will meet from the older section of the work force and their unions?

The young workers will demand a greater voice in setting standards for a fair day's work as well as a fair day's pay. That's a direct challenge to management's traditional prerogative of determining what constitutes a fair day's work.

The traditional classical use of rules, orders and top-down command and control is being challenged by the modern workers. This will lead them to seek a greater voice in the decisions which affect their working life. The shape this participation takes will depend on the responsiveness of employers. Highly responsive employers can be expected to propose a Canadian version of the Japanese quality circle approach. This model, in which employees operate in small groups, focuses on problem solving at the work place. Everyday matters and work problems are dealt with by the employees. Quality circles have been credited by many as one of the principal reasons for Japan's incredible productivity growth during the past two decades. The younger work force will turn on their institutionalized unions just as firmly - perhaps more firmly - than on other elements of society.

They'll demand the same freedom as the professional, freedom to operate comfortably within the allotted time-and-work frame. And in the long run their demands will be met. If they can finish a job in five hours, they will want to take the rest of the day off.

I don't buy the broad assessment of today's youth as lazy. The imperatives have changed. It has been said that young people today have the entrepreneurial spirit of early capitalism, whereas their parents have the managerial ethic of security, order and dependence that is born of hard times.

As the functions and tasks of the work place become more technically oriented, employees will be needed who, apart from possessing obvious technical competence, are also capable of adapting to rapidly changing situations and who can demonstrate high levels of personal problem solving ability, rather than merely following instructions and procedures.

The reluctance of younger workers to change job locations, or spend time in commuting, because it interferes with life style patterns, spouses' jobs and other personal factors is already apparent. This is in stark contrast to my generation who moved willingly because it fitted our personal plans and those of our employers.

> ". . . women have made great strides recently . . . just watch them over the next generation."

Older Workers

Despite the economic erosion of inflation, today's retiring worker, on the average, is better off than retiring workers in prior years and paradoxically may be better off than his counterparts will be 15 or 20 years from now.

I suppose I'll always be hooked on that old work ethic, but it seems cruelly contradictory to dramatically extend a person's physically productive years, then wittingly restrict the span of years to which he can apply this greater capacity.

Retirement has become a matter of social policy, because politicians consider it good to get people out of the work force so as to get other people into the work-force.

Consider the modern concept of "out after 30 years", irrespective of age. There is growing evidence that this concept may have adverse social consequences, since the evidence shows that the strongest predictor of **longevity** is **work satisfaction**. Thus, we will see a basic contradiction between **early retirement** as an **institutional goal of the unions**, and the desire and **best interests** of the individual to carry on satisfying work.

Surveys have shown that at least one-third of those who retire early don't like it, and for two principal and fairly obvious reasons - financial pressure and loss of the work identity. Despite cries to the contrary, most people in society want and need to work.

A case can be made for more partial retirement plans and programs. It might be possible, for those who wish to continue working past the normal retirement age, to reduce their working hours over a five year period from age 65 to 70.

Emerging from this, the older organized worker will require that his union obtain for him greater assistance toward career adjustment if he is to be retired earlier than he would like: such things as **educational assistance** and **skills-upgrading** to prepare him for a new and different career.

He will want and demand greater **economic protection** and this will accelerate an already **perceptible** union move to seek a cost-of-living escalator clause in pension plans.

So while the older worker will be unable to withstand the onward rush of youth, he will exact heavy compensation. Before leaving this topic - early retirement may have **severe** manpower ramifications as more and more of the most highly skilled leave the work force early, at the peak of their proficiency level, causing a serious drain on the already strained supply of skilled labor.

Women

If you think women have made great strides recently in terms of identity and parity, just watch them over the next generation.

You'll see in the unions, for example, a set of demands emanating from the women, dealing with their identity, they'll deal with quality of life as seen by women in the work environment.

Few of those jobs traditionally exclusive to men will remain sacrosanct. Oh, we may still keep the locker-room attendant at the YMCA - things like that - but generally speaking women are going to get their way.

The traditional denial to women of a wide range of jobs for which they have since proven themselves the physical and intellectual equal of men is already lessening. The great strides that women are bound to make in the labor force over the next few years will have a profound effect. We're going to see a steady - indeed, a rapid - wiping out of wage disparities. Equal pay, equal opportunity, and a further demand for equal utilization.

The White Collar Group

There's a growing feeling among white collar workers that the office as presently organized, has become just as dehumanized as the factory. When you consider the typing pool, the computer key punch operators, accounting clerks, and so on, there is some validity to comparing some of the big office complexes to the automobile plant's assembly line.

The so-called fundamental difference in outlook between white-collar workers and blue collar workers will grow increasingly narrow over the next few years.

The narrowing money gap will be an important factor, but not the only one by any means, in the white collar worker's rapid move to collectivity.

This drive to white-collar unionism is being **precipitated** by the growing feeling among white-collar workers that they have somehow been left by the **wayside**. They **lack** the strength of the organized, and the goal of ultimately obtaining managerial status seems more remote and **somehow** less attractive.

Technology tends to reduce the number of people in the main decision-making stream, and so vulnerability and insecurity seem to grow.

The white-collar worker is perhaps the least secure. It's the easiest section from which to cut any fat should a soft business period require some belt-tightening. The unionized employee is less expendable and moreover has his union protection.

Insecurity is the greatest impetus to unionization, and so the ingredients for a massive surge in white-collar **collectivism** are very much with us.

Management Group

This group has much in common with the white-collar subordinates. In many instances they have no more involvement than do their subordinates in the decision-making process, yet they are forced to implement company policy to which they are not a party. Moreover, they frequently lack the resources to carry out the policy. As technology makes it easier for essential information to be placed in the hands of a few senior officials, an increasing number of the management group are cut out of the real decision-making process.

Morale drops and the turn is to counter-productive behavior - absenteeism, alcohol and so on. Disenchantment rubs off on subordinates.

All of this, coupled perhaps with union pressures on managerial rights could lead this group toward unionization to seek the support, protection and recognition no longer inherent in the positions they hold. The unionizing of supervisors was unthinkable 10 years ago. Now it is supported by legislation at the federal level in a number of provinces. Also, a wide variety of professionals are embracing collectivism, whether you call their organizations an association or a society, or whatever, if it does the job of a union, it is a union.

The Unions

In most respects, the unions have never had it so good. Everything points to greater collectivity at a more rapid pace. Legislation in various locations has made recruitment easier, and the trend in Canadian law will continue to support the unions in the well-founded belief that collective bargaining is now firmly etched in the socio-economic framework of our society.

But it's not all roses for the unions by any means. With growth comes problems. Take the strike weapon for example, as one segment of society grows to immense proportions, it cannot damage and inconvenience that society without damaging and inconveniencing itself.

Recalling my remarks concerning the younger workers, I fear that many unions will find themselves stuck in neutral, attempting to continue to bargain for the bread and butter issues, far out of touch with the new generation of union members.

I see a new wave of young, better-educated, better-informed union members challenging for leadership and firmly shaking the whole union structure.

Unions too will be faced with reconciling the different and often contradictory needs and objectives of their various member groups.

We've talked of the older, the younger, the women, the white-collar and so on. It's conceivable that we may have cafeteria-type package contracts. Instead of a specific benefit, we will have a variety of benefits on the same theme. Each union member will perhaps have a series of benefit electives from which to choose. So we'll have sub-settlements within the overall settlement.

> Humanizing will have to become more than just a fancy word.

The militants of the future will be found less in the industrial unions, and more among agricultural workers and the white-collar workers - the professionals - the teachers - the police.

It will be the impact unions - the unions with the ability to affect the public quickly and dramatically -from which the new militants will emerge.

Very little of what I've said so far can be very comforting to management.

In order to come to grips with the various changes being thrust upon it, top management will be forced to assume greater responsibility for determining exactly what employees, and their needs and goals, are all about. Humanizing will have to become more than just a fancy word.

Management will expend more effort in this direction as it becomes more aware that union leadership may not be as **tuned-in** to the needs of union membership as had been believed. A growing tendency for union members to reject labour contracts recommended by their leaders will finally drive this point home to management.

And this trend will not only continue, but will be felt more and more in the nation's executive suites. It's an especially interesting problem because it involves an evolutionary process for a large section of our current management whose position in the total labor relations scene is being gradually realigned.

Top management in the modern business setting must not only be skilled in the traditional management techniques, but must also be capable of analysing and

responding to the social climate in which the companies operate. There is growing evidence that corporations are no longer seen simply as economic institutions. They are now viewed as having a social responsibility which transcends profits, and their management are expected to demonstrate high levels of appropriate moral behaviour. It is not inconceivable that corporations, because of these trends may develop a regular practice of reviewing the social impact of their policies and practices.

What will be the Short and Long-term Consequences of the Changed Work Place?

Apart from the very obvious one, there are a number of crucial issues which you as educational professionals must address.

The increased dependence on technical manpower, in our emerging work-force raises a number of important issues which will force change in educational priorities, in educational techniques and perhaps even in the training and background of educators and training professionals.

As a society we appear to be much better equipped to find large sums of financial capital than we are at identifying and developing human capital.
The news media, and others, have already made us

> ". . . decisions we make today can deflect, divert or turn all the racing currents of change."

aware of the existing shortages of technically skilled and scientific manpower. They go on to forecast large shortages in the future.

This will place a heavy load on our educational system. Apart from the sheer burden of developing technical skills, the education system will have the added task of meeting a continuing life time education and training requirement for technical and professional people.

The challenge for educational professionals like you will be to identify the future manpower needs in terms of the skills required, and to develop the curricula that will meet those needs. This task, though formidable, is a manageable one, and is not unlike the one many of us have faced in our role as personnel planners for corporations. You, however, generally will have a longer time frame in which to respond to the needs.

In specific terms, one immediate challenge will be to deal with the skills obsolescence which will develop as a result of the emerging automated office. Programs will have to be developed to allow skills to be transferred, or at best to allow those affected to be retrained into more necessary skill areas.

There will be a need for early identification of change, to be followed by career counselling to assist employees to be redirected into new fields.

If the anticipated shift from the work-place back into the home occurs, then there will be heavy pressure to learn new skills quickly by a large number of people.

The shift from the traditional work-force to either the home or to smaller work areas will bring a number of problems. The motivation and management of workers, corporate and social reorganization, will make the shift more painful. The question of morale, interaction with people, cutting people off from the traditional work-place -will have to be addressed and dealt with.

The educational emphasis may have to be changed. The schools, in responding to the need for workers who are capable of using their own intelligence rather than following procedures, will have to shift from the present methods which are still largely geared to producing workers for highly repetitive jobs. More learning will occur outside, rather than in the classroom and education and learning will become more interspersed and interwoven with work and will be spread out over a life-time.

At another level, as hours of work shorten, individuals will be looking for educational services to provide skills upgrading courses or education for leisure.

Employers too will require considerable assistance in providing the necessary in-company training and education to meet the demands of the new work-place. Individuals in your position will play a valuable role in the development of appropriate company programs.

The trend toward job enrichment, to work "redesign", with emphasis on building "mental" tasks into every job will continue. This trend will precipitate a need to recycle and upgrade people on a large scale. The change in the work place will require new skills to be developed and taught. This, in turn, will demand new sophistication in the selection process we now use, and will also affect the promotion sequence and ou aining techniques.

A restructured work place will result in a movement toward profit-sharing. A sharing in the profits will be necessary if employees are to be convinced that they are not being exploited. This, too, will cause labor-management strain since management will view any union push in this direction as a further threat to its right to manage.

Middle management and top management personnel will require assistance in meeting the demands of the new work-force. Your institutions can be of great service by providing high quality contemporary information and management skills improvement.

As older workers become displaced through retirement, the educational institutions will have a key role in providing training to them, either redirecting them to other jobs, or by fulfilling hobby or leisure requirements.

We cannot precisely design the future for there is too much uncertainty. We can, however, refine our attitudes so that they are positive and flexible, and will allow us to make full use of the benefits which technology has, and will, provide.

The issues raised here may be small in comparison to the magnitude of the changes that are upon us. However, decisions we make today can deflect, divert or turn all the racing currents of change. We must be willing to reshape ourselves, and our institutions, to deal with the new realities. □

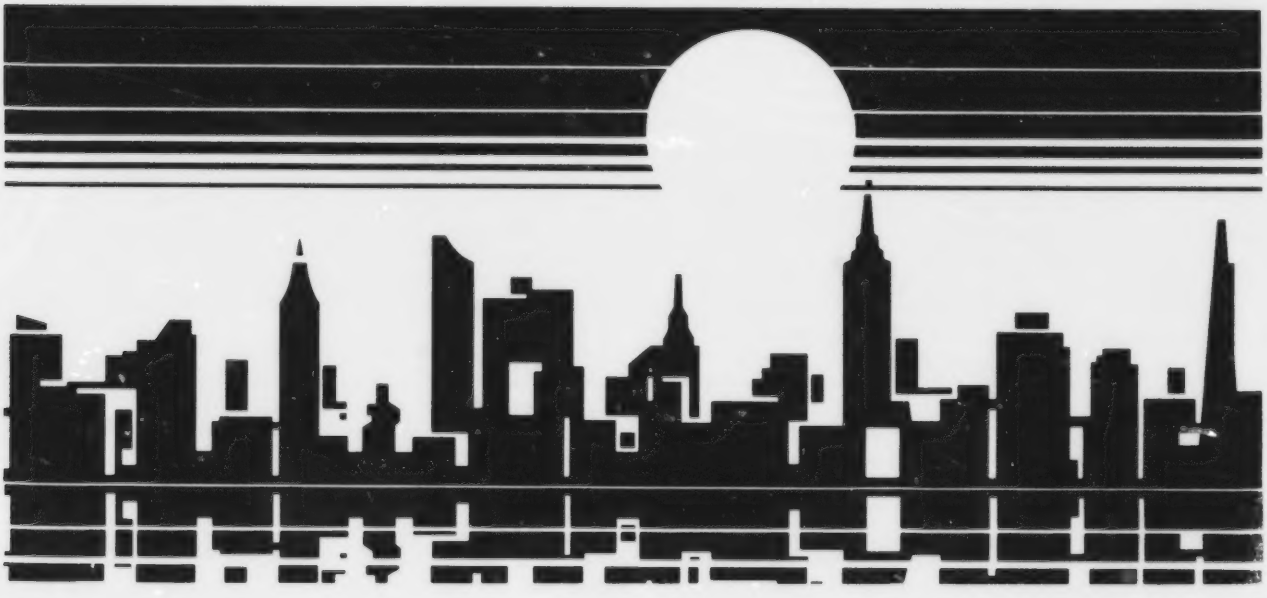
Ken Clark

Continued from page . . . 42

depends on people working together - the concept of a craftsman isolating himself and creating a masterpiece doesn't apply to the construction industry.

Our country was explored, fur trade routes established, railroads built and other resources developed by groups of people who were able to move to where their services were required. This is still true of the construction industry and we must preserve the mobility of our work force. We must continue to work towards the standardization of craft training and registration standards including those of the apprentices. During the next few years, we cannot reduce the quality of our training, we will need skilled people who can work efficiently in all sectors of our industry. We must all work harder in order to improve our economy, we cannot depend on mega projects to work miracles, because at this time it is doubtful just how many will be built.

I thank you for the opportunity to express my views of training for the construction industry -- an industry that generally does not always receive the recognition that it should, not only for projects it creates but also for the careers it can offer to its followers, a career just as rewarding for the craftsmen as for those in any profession. □



BARRY ELLIS

Teleconferencing and Its Impact on Adult Education

The telephone has been used, for the last dozen or more years, as a tool to communicate with remote learners. Formerly, it was a connection between a geographically remote adult learner and an institution supplying education using some form of correspondence. This mode of operation has become known as tele-tutoring. Very few, if any, institutions in Canada went beyond this mode of operation until recently. Educational teleconferencing, is however, the use of actual telephone lines and bridges for live, real-time instruction to remote groups scattered around the sparsely populated rural areas of the province. All provinces in Canada have similar needs to reach out to rural communities causing a sudden widespread interest in this medium. Some rather significant examples of this need are:

- British Columbia with its mountainous terrain, hazardous winter roads and huge distances between towns have some serious educational communication needs.

- Ontario with its remote northern outposts hundreds of miles from the major population belts around the great lakes have a need.

- Newfoundland with its scattered coastal populations and its off-shore islands and drilling platforms have this need.

- Yukon and NWT with its hostile environment, poor communication linkages and sparse population have a massive educational communication need.

- Saskatchewan with its northern populations geographically isolated from the three or four major centers have significant needs and so on.....

How Does Teleconferencing Work:

The technical side of audio (telephone) teleconferencing is relatively simple in concept.

It is based on the establishment of remote sites that are conveniently located for learners to commute a short distance to their "class". The University of Calgary currently has twenty educational remote sites and fifteen rural hospital sites on their system. Each rural site has a piece of equipment called an educational teleconference convenor. This device converts the telephone into a group tool, using a loudspeaker (not a speakerphone) and a series of push-to-talk microphones.

Secondly, the technical system requires a dedicated origination site on-campus from which the instructor would originate the class. This can be done in an office, a home or classroom but experience has taught that the best electronic control is possible from a studio which is in eye contact with the teleconference technician/operator. The control center will usually have audio-taping facilities, automatic message equipment and function switching. All classes are live with perhaps small segments of pre-taped material. The instructor may talk to all centers at once providing that all the remote sites are joined together by some form of "bridge". This "bridge" may be the conference operator at the telephone company or an institution-owned special purpose item to be used only for ETC (educational teleconferencing).

The learners at each site may talk or hear all other sites on the system including or excluding the instructor. (See Access Bandwidth 3 for a complete technical description of this system*).

* Write to Mr. Ian James, Bandwidth 3 Newsletter, Access, Edmonton, Alberta.

Support Systems

Actually the technical side of teleconferencing is the simple component of the entire system. In addition to this the institution will need to develop the following areas:
- instructional development for the ETC presentors
- community liaison functions
- audio-visual materials

While owning a bridge for teleconferencing may appear to be the end all imperative, it is really the beginning of the developmental function.

Instructional Development

Institutionally, the ETC must be a highly structured, carefully planned sequence of educational events presented in an electronically "live" manner.

While at first glance it appears to be very similar to on-campus instruction, the skills used by the instructor are very different and very often, non-existent. The instructor needs to have the following experiences to grasp the electronic capabilities and limitations of the system:
- discussion with peers who have used the system for a class
- some formal instruction on the system
- observation sessions of existing courses
- a model for curriculum development
- non-threatening practise sessions without the class in place.

Many different types of materials are available on the topic. Monson (1979) developed a teacher training book entitled "Bridging the Distance" which discusses the teaching skills for teleconference users. She discussed four basic concepts of concern to the potential instructor:
- **Humanizing - the making of content and approach humanistic to remove inhibitions or "fear of flying".**
- **Participation - a series of techniques designed to encourage and promote interaction/participation on the system.**
- **Presentation - Style - the use of a variety of styles that will enhance learning.**
- **Feedback - strategies that can be used to get feedback on - student learning**
  - **technical quality**
  - **student satisfaction**

Also the TCTS (Trans Canada Telephone System) is currently publishing a guide on the use of educational teleconferencing (Ellis, 1982;. The title is "Higher Education by Telephone - a Guide to Audio-Teleconferencing for the Canadian Practitioner". The guide will address many of the instructional development concerns that should be addressed.

Community Liaison

One of the most pressing imperatives of ETC is the establishment of operational rural community liaison with local educational agencies such as FEC's (Further Education Councils), community colleges, school boards, community schools and the like. This linkage must work to the advantage of the originating institution and the receiving community. The community should:
- help locate a room or place for the ETC center
- help the institution with distribution of promotional material to appropriate people
- assist the institution to find a part-time program assistant to run the center and use the equipment
- support the ETC center with janitorial, heating, light and security.

The institution on the other hand should provide:
- equipment
- brochures and promotional material
- phone-line in center
- materials and texts shipping to and from
- equipment maintenance
- program assistant training and the actual courses.

The community will help the institution pick a location compatible with current community events. It could be held in a:
- community hall
- education center
- school
- library
- town hall
- court house
- senior's drop-in center
- municipal office
- DA's office

and so on.....

The liaison person for the community should also assist the institution to interpret the community politics, sensitiveness and/or problems.

Audio-Visual Materials

One of the major criticisms of audio teleconferencing is the lack of visual components. Many instructors feel they need body-language and visual cues from their audience while teaching. This is possible with the use of the program-assistants. This lack of visual component also means that the student cannot be given visual content while this course is in progress.

The University of Calgary courses on ETC investigated the following strategies to provide learners with illustrative, motivating and enhancement visuals during the on-line session:

- slides - carousel shipped in unison to centers for use during the class
- VCR tape - duplicate sets of video tape to be viewed during, before or after presentation
- overheads - each center has a duplicate set of color-coded overhead transparencies for use on demand during class
- computer graphics - interactive motion computer graphics using telidon system to be controlled centrally but distributed via audio linkage to each center
- slow-scan video - non-motion video black and white pictures of instructor, material or real objects to each site via telephone cables.

The students should also have brightly illustrated textbooks, handouts and course materials that would be ideal for visual referencing during the live presentation.

Conclusion

Obviously, educational teleconferencing is not a panacea for adult education course delivery but it does have significant potential for remote course delivery to people who would otherwise have nothing. Adequate data tends to suggest that the system does have merit, is defensible and can be so structured to be cost effective. In today's economy and educational mileau that is all that is required (Ellis, Chapman, 1982). □

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E. GHOSTKEEPER

Native People: Adult Learners & the Future

The intent of this paper is to discuss the problems Native people encounter with today's educational system and to present an alternative solution. The solution will safeguard this generation--the adult learners of the future--from experiencing the difficulties faced by today's adult learners.

Today's adult Native people who elect to return to school usually have a specific goal in mind. Whether it be to acquire the necessary skills and knowledge to become a Heavy Equipment Operator, Welder, Carpenter or Teacher, the bottom line is to become an active participant in today's economy.

Their determination to attain that goal must be strong because they will face many obstacles. The first barrier they encounter is their lack of education to meet the requirement criteria. They must, therefore, obtain some academic upgrading, which in many cases also necessitates moving or commuting to an Alberta Vocational Centre; or if they are fortunate, their community has a Community Vocational Centre (C.V.C.). Should the adult student also have dependent children, he is faced with financial difficulties. The training allowance granted to students is barely adequate for a single person with no dependents; so if he has other people to care for, it is indeed a hardship.

The irony of the situation is that the prospective student could earn as much money, and indeed in some cases more, by remaining in the community and being employed in a government band-aid program.

Nonetheless, the number of adult Natives returning to school is increasing. This is due to the increased availability of the training and learning institutions in the North. The gradual sway from traditional modes of lifestyle and the increasing encroachment of technology in the Native community are also factors. Many adults realize that their only alternative to their present economic situation is to acquire the skills to actively participate in the "booming" economy of the North.

Rather than dwelling on the adult learners of today, I would like to focus on the adult learner of the early 21st century. Unless something is done now, today's child in grade school will be facing the same dilemma in twenty years as his parents are experiencing right now.

The present educational system must be revamped to avoid today's Native child from facing similar problems of lack of education. To illustrate this point, allow me to trace a Native child through today's educational system.

From the onset of a Native child's schooling, he encounters cultural and linguistic barriers. If the child has been raised in traditional Native culture, he has been taught by imitation and observation. If his home and/or community still speak a Native tongue, he has a limited vocabulary in standard English.

Such differences in background in the early years creates difficulties for Native children to adapt socially when encountering formalized instruction at school. They also have trouble meeting their teacher's expectations, whom are usually from a Euro-Canadian, middle-class environment and tend to propagate its accompanying values.

As might be expected, the Native child is likely to experience cultural shock in his own community. While at school, he is likely bewildered in the midst of so many strange experiences and expectations and he doesn't know how to react and behave. He is likely to have trouble understanding English concepts and abstractions and communicating with his teacher. He may be unable to put English names to objects or follow a discussion and/or formulate a question to obtain the information he needs.

By the time he reaches the third or fourth grade, he begins to flounder seriously since he is not prepared for the unrestricted vocabulary used in these grades. The books he is attempting to digest usually reflect urban,

middle-class Euro-Canadian experiences and not those familiar to or relevant to the rural or Native child.

A lack of familiar materials and a foreign language are not the only difficulties he encounters in the educational materials and books. Many of the social studies and history texts continue to describe history, development and progress in Euro-Canadian terms. These books tend to give the impression that the history of Canada began with the arrival of the European and generally ignore the Native contribution to Canada's growth. In such books, the Native child cannot see himself as a person with a respectable heritage, he can see few Native heroes. He is not told that his ancestors were philosophers, environmentalists, politicians, economists, religious, educators, inventors, etc.

> "... the Native child did not drop out, he was gradually and steadily pushed out."

This tragedy is two-fold. The Native child is taught to feel ashamed and inferior, and the non-Native child's mind fosters the concept of racial superiority. Both groups suffer from the radically-biased content of such texts; both are socially, emotionally and psychologically hurt by it. The Native and non-Native children do not learn to understand and appreciate each other and neither are given a chance to learn objectively about present and past Native ways.

As a Native child progresses through the school system, he experiences further cultural alienation and a greater pressure to acculturate and assimilate; in other words to adopt middle-class values and the Protestant work ethic. He usually develops an inferiority complex. This low self-esteem coupled with the fact that by now he is probably a grade/age retardate, invariably results in greater absenteeism and eventually he drops out of school.

But as is evident, the Native child did not drop out, he was gradually and steadily pushed out. He didn't conform to the system which is oriented to the dominant Euro-Canadian society.
Once out, he will be faced with a lack of skills and knowledge to actively participate in today's modern and technological society. He will go through periods of unemployment and occasional seasonal manual labour types of employment. He may after years of this frustration and feelings of inadequacy return to school, the very root of his problem, to alleviate his current economic situation.

So what is the solution? A balance between Native and non-Native concepts of education must be sought and attained. The Native child must be allowed to grow and learn in an atmosphere conducive to formulating his own beliefs and values. He should not be placed in a position of dichotomy between his culture and that of the dominant society. The two must be meshed to foster a sense of pride in his ancestry and a chance to function satisfactorily in his community and society at large. He must be taught to acquire the skills and expertise to assist his community which is struggling for economic, social, cultural and political self-reliance.

Even though I have presented a realistic picture, although depressing to some of you, I remain an optimist. I am confident that the current trend of incorporating Native curriculum in schools is indeed a step in the right direction. But more needs to be done if we don't want to have another conference of this type in twenty years, with the same picture by yet another concerned Metis leader.

It is all very well and fine to talk about the adult learners of today and the struggles they must face to ameliorate their fate; but steps can and are slowly and pain-stakingly being taken to provide today's generation with a better set of tools to change channels for their future! □

HEATHER MENZIES

Word Crunching in the Office

The subject of my talk is so serious, I think the least I can do is begin with a joke. It was originally told at a conference on the employment implications of electronic technology, and was intended to illustrate the difference between the optimist's and the pessimist's perspective on the office of the future.

In a play written in the tradition of great drama, one of the characters is supposed to plunge into hell. In this particular staging of the play, he gets there via a trap door set into the stage floor. Well, the play goes along fine until one night the actor playing the part falls sick. His understudy takes over. The only difference is that the understudy is somewhat corpulent and, you guessed it, when he plunges into hell, he gets stuck halfway through the trap door. Quick as a flash a voice from the back of the theatre calls out: "Hallelujah, hell's full." Everybody laughed; everybody, that is, except the women in the audience. It was quite striking, but not surprising. Women know that the office of the future is not their office. The kind of work that they do there is being automated. The fantastic electronic information systems there are intended for use by knowledge workers -- that is, professionals and managers who apply these systems as tools in their regular work and to create new work. Women, however, have traditionally been the information support workers in the office and, furthermore, they have not been the knowledge workers. Women handle information -- typing it, filing it, etc. -- they don't make something of it. It is precisely this support-type work which is being automated.

Because of this -- because women are expected to bear the brunt of office automation -- and because the majority of women are office workers of one kind or another -- for a total of roughly three million women across Canada -- I will talk a lot about women. My comments on the implications for educators, however, are largely applicable for both men and women.

Another reason for highlighting the plight of Canadian women -- besides to suggest that they will become a major client-constituency of adult educators in the coming years -- is that they so clearly illustrate the breadth of the problem educators must grapple with. While I'm convinced that women are actually better equipped than men to fully grasp the potential of the office of the future and the information society which will be created by its technology, women are blatantly trapped by the worst aspects of the mechanical age in the image of which the traditional office and work environment generally have been moulded. They are ghettoized into static narrowly defined jobs that lead nowhere, and which are cast in the cement of a bureaucratic regimented hierarchal work organization.

As Marilyn Ferguson writes in **The Aquarian Conspiracy**, the bureaucratic mind set of the industrial and scientific age is based on fragmenting,segmenting, controlling, isolating and taking things out of context. The emerging new paradigm associated with the Aquarian Conspiracy is in keeping with being on Spaceship Earth, as Marshall McLuhan said. If features a holistic ecological vision of infinite connectedness; intuition and instinct harmonized with intellect, right brain coexisting with the left, collegial versus hierarchal, inclusion rather than exclusion.

It is a feminist paradigm as well. It also reminds me of what Margaret Mead was suggesting in her book **Culture and Commitment**, published in 1970.

She maintained that the present was no longer an evolution of the past but an explosion of the future. Helping people prepare for it she said, required an approach or teaching model different from the relatively passive prescriptions of traditional education. It called for a dialogue, a model based on the dynamics of change itself. Within this model, she said, teachers should not be emphasizing what to learn but how to learn, how to interpret and adapt to the new frontier of change.

In the spirit of that model, let me begin what I hope will be a dialogue by telling you briefly what I see on the frontier of this new computer age.

The office of the future is both an extension of the automation process, which began with the first computer installations in the 1950's, as well as a transcendence above it, into a whole new level of possible activity. Here, knowledge workers use computer terminals supported by data banks and communications links around the world, as well as a wealth of computer software for problem solving, research and analysis, training and self-education. The difference between an information worker and a knowledge worker is profoundly significant. While the latter uses information to make something happen -- a decision, a transaction, a blueprint or a marketing strategy -- an information worker merely does something to it in a mechanical routine passive manner, usually in support of the knowledge worker.

> . . . these professionals tend not to be former clerical workers!

In offices, traditional work associated with handling print information -- recording it, processing it into reports, retyping it, printing it, copying it, filing it and sending and receiving it by mail -- is being automated. In banks, similar clerical work associated with documenting and recording the most frequent of customer transactions -- making deposits, withdrawals and transfers for instance--is being automated. In insurance companies, activities that have traditionally been considered women's work in that industry -- such as typing up the legal passages of insurance policies, issuing premium notices and processing the incoming premiums, issuing notices for insurance renewal -- have been taken over by computers. In libraries, the entire job of keeping track of books is being automated. In hospitals, recording lab results and maintaining patient records are being automated. In telephone companies, not only is the work of connecting long-distance calls being automated -- except for a narrow range of special instances, but most of the behind-the-scenes work associated with opening and closing accounts, arranging for installations, maintenance checks and repair service, plus recording charges, issuing bills and adjusting accounts is being automated as well. Instead of this work being done on paper, it is being done electronically through a network of communications links between computer terminals, called a "teleprocessing network."

Once the automated functions have been integrated into corporate-wide computer-communications networks, the office-of-the-future phase begins. In this phase, automated systems become tools for problem solving and innovation. These tools take the physical form of terminals on the desks of the professional managerial staff -- i.e. knowledge workers. Tellingly, these system-tools are often referred to as an "electronic secretary."

In the transformation from the traditional labor-intensive mechanical office to the more capital-intensive office of the future, it seems that clerical-support work, and supervisory and administrative work related to executing processes and following set procedures, is being automated. The remaining work and the new work being created seems to be much more demanding, but potentially at least, much more creative as well. At least this is what I found in my research.

In a study published under the title **Women and the Chip** (The Institute for Research on Public Policy , 1980), I examined a large company's head office, an insurance company, several banks and finally, supermarkets.

I found three major trends: first, a consistently declining demand for clerical and related service and supervisory workers; second, an increasing demand for, and intensification of the work in, professional, technical and managerial occupations; and, third, a growing skills gap between the two occupation areas.

Projecting from these findings and comparing them with the continuing concentration of women in, and seeking, clerical-type work, the unemployment rate among female clerical workers could escalate to as much as 33 per cent by 1990. What it means is that, unless steps are taken within the very near future, up to one million Canadian women could be unemployed by the end of the decade.

My findings are remarkably consistent with the results of studies which have been done in Europe. In the Federal Republic of West Germany, the so-called Siemens Report predicts that 40 per cent of office workers could become redundant through office automation. The Nora Minc Report from France predicts a 30 per cent loss of employment in the tertiary sector generally and particularly among bank and insurance industry workers. In the United Kingdom, the Jenkins and Sherman study predicts that office and other computer-based forms of automation could boost Britain's unemployment rate (for men and women) to 25 per cent by 1990.

Some examples from the case studies might illustrate the predictions, for the negative employment effects are subtle and, further, disguised by employment gains in other areas. One thing I learned is that the negative employment effects are indirect. They come through reduced job openings, attrition and increased part-time employment. They also present themselves indirectly. In fact, when computer-communications technology is introduced, there is often an initial increase in clerical employment because traditional paper-based information handling carries on while the new electronic-based information handling spends its first years as such totally new business functions as data processing. But when the new information system reaches a certain point of maturity -- for instance, with on-line computer communication and automatic teller machines which have transformed traditional banking functions -- then clerical requirements begin declining sharply. Entering customers' transactions used to be a separate clerical function from actually documenting the transaction at the teller's wicket. First, it was written into ledger books. More recently, into the computer at the bank's data centre. With bank branches now connected on-line with the data centre, the teller now makes that entry automatically as she executes the transaction at the teller's wicket. Now that automatic teller machines are being introduced, the customer will punch in her own transaction information, bypassing both the teller and the clerical worker at the data centre.

I wasn't able to get figures on clerical employment shifts within the Canadian banks, only total employment. After booming ahead at a rate of 10 per cent employment growth a year through the 60's and most of the 70's, employment growth suddenly started to level off. In 1980, for the first year, employment stagnated altogether. It was a significant development especially since it corresponded with a period of expanding bank services -- multi-branch banking, daily-interest savings accounts, etc. But, offering these new services has required almost no additonal clerical workers; it has required additional professionals instead -- computer specialists, accountants, etc. Furthermore, these professionals tend not to be former clerical workers!

Yet women, who constitute 70 per cent of Canadian bank employment, are concentrated to an overwhelming 80 per cent in clerical positions.

In the insurance company I studied, I found the same pattern of relative clerical decline and professional employment growth. One of the personnel officials I interviewed described the effect of this change as reshaping the company's employment profile from a pyramid to a barrel shape. I was also given detailed company employment statistics which indicated how fast this is occurring. For instance, between 1977 and 1980, clerical workers' share of total employment in the company declined by 12 per cent. On the other hand, specialist and professional employment increased by 10 per cent during the first nine months of 1979 alone.

> Women are likely to become the victims of this the computer age . . .

Another interesting finding was the increase in external hirings versus internal promotions -- especially for this company which has prided itself on developing its own people. The reason for the change lay in the increasing need for specialists in computer science and related fields.

In the third case, the corporate head office, during the automation of the Information Systems Department, the employment composition shifted from 80 per cent clerical in 1972 to 45 per cent clerical in 1980. Most significantly, of the 140 workers removed from the clerical ranks, only two were among the 110 additionals to the professional-managerial ranks. They were replaced by computer scientists and other highly trained specialists hired from outside the company, and representing what one personnel official termed "a quantum leap" in skill difference from the former clerical workers.

The other 138 clerical workers were given lateral transfers to yet-unautomated departments, with some even accepting demotions. Meanwhile, armed with their computer and related skills, the new professional-managerial workers will exacerbate occupational discontinuity by extending the range and sophistication of their work and thereby escalating standards of performance.

Under these rising standards, an underwriter in an insurance company might be expected to develop a computer-program model for evaluating risk factors in a client's application for insurance to determine exactly what premiums she should pay. At the least, the underwriter would probably have to use such a computer program, which implies familiarity with statistical analysis and understanding how computer systems work.

Computers will become as commonplace as desks and typewriters in these workplaces of the future. The standard of literacy expected for people who work there will also expand to include computer literacy. This involves a general knowledge of how to use computers, understanding of the logic principles on which they operate and possibly some skills related to operating computer-communications systems. But the difference between the two levels of work, in the workplace of the future versus the traditional office and factory, involves more than additional knowledge and skill.

The new workplace can be located anywhere. Since its essence is an electronic information system, you can electronically establish your work presence wherever there is a television transformed into a video-display unit. As long as you have a computer keyboard wherever you are -- it could be at home or in a hotel halfway around the world -- you can "go to work" simply by typing on your keyboard. As futurist Alvin Toffler pointed out in **The Third Wave**, the home can become an "electronic cottage" simply by the installation of a computer terminal in the spare bedroom. The walls of institutions are becoming porous, with elements of one moving into another; the implications are profound for the nuclear family, the home, the office and even the little red schoolhouse.

As well, the organization of work is shifting off a fixed and linear plane. With strict reporting hierarchies being decimated by automated reporting, people are being freed to form a host of lateral communication links loosely tied together by their collaboration, via automated information support systems, on specific work projects.

Individuals will also play multiple roles. You could be a member of an interdisciplinary team working on a specific project while at the same time, you respond as a subordinate in a management committee. You might be a resource person to colleagues in other departments, and perhaps a career counsellor to apprentices and others on job rotation programs, and you might also participate in your own job-enrichment or training program. This requires flexibility of role playing rather than rigid roles.

Individuals' working lives will likely also become less linear, and more work projects interspersed with periods of education and self-development. The idea of "completing one's education" is fast becoming as obsolete as the idea of a "job to last a lifetime."

These then are some of the implications for educators in this age of transition into the dynamic electronic information age.

But in helping women, adult educators must also take into account their unique and uniquely precarious position in the workforce.

Women are likely to become the victims of this the computer age -- or "to bear the brunt of (its) impact", or to be "hardest hit" by it, in the words of two reports -- because of their unique, and uniquely precarious, position in the workforce. It is no accident that the type of work they do is on the automation firing line. It's called women's work because it involves playing a support role rather than the role of initiator, innovator, decision-maker. The latter aspect of work defies automation, because computers can't create new things. However, support work (putting an idea or decision into action) can usually be standardized, mechanized and then finally automated.

Women are socialized towards support-type work and, equally important, are discouraged from roles exercising initiative and leadership, because this work is consistent with the stereotype for the female in society: the nurturing mother figure. As another feature of sex-role stereotyping, girls grow up (still) feeling that their primary role in life is in the home as wives and mothers. Accordingly, consequently, they regard employment as a temporary and rather fringe element in their lives, essentially an "until" activity, "until I get married, until the mortgage is paid off", etc;. It's no surprise, then, that women end up on the fringes of employment -- not only concentrated in the unskilled and semi-skilled support jobs, as opposed to the more taxing stuff of careers, but comprising 75 per cent of part-time workers in the country.

There's a wealth of research documenting the sex-role stereotyping which perpetuates situations -- in the teeth of reality stating not only that women are becoming increasingly permanent members of the workforce, dropping out only briefly for family reasons -- but furthermore, that over 60 per cent of women work because they have no choice: they're either single, single parents or married to men earning so little that without the wife's income, the number of families living below the poverty line in Canada would double. For those who are interested, I suggest reading a recent publication from the Science Council of Canada called **Who Turns the Wheel**. It documents the link between sex-role stereotyping, and women's under-representation both in science and technology jobs and in science education. To give you just one illustration of the socialization at work, a study of children's readers in

Manitoba schools documented 370 occupations or roles with boys or men depicted in them, but only 80 for girls and women. There were no female engineers, chemists, biologists, geographers and so on. Among the female occupations depicted, the most frequently shown were mothers, grandmothers, nurses, teachers and librarians. For roles showing leadership and exercising initiative, girl-students were shown a choice between witches, princesses and queens.
We might chuckle, but this is the challenge adult educators must face: how to overcome the effects of generations of socializing.

I return now to the dialogue model and Margaret Mead. Remember, the traditional model, using examples from the past, emphasizes what you should learn and be, rather than how to learn and how to cope and adapt. This means that it's geared almost by definition to perpetuate increasingly obsolete roles for women and handicap their ability to identify with and move into the emerging new professional, scientific and technical roles. But through a forward-looking dialogue approach, students and teachers can together confront the realities of the changing workplace and women's new roles within it.

> ... adult education ...
> rather like fitness,
> it is becoming a life activity.

In summary then, these are the implications for adult educators as the traditional print-based office is transformed into an electronic information system. First, it will mean a massive adjustment for hundreds of thousands, even millions of people: not only women clerical workers and supervisors, but men and women both who work in traditional administrative and middle-management work orchestrating processes and overseeing procedures.

Second, it will mean not only acquiring new skills but a major transformation -- from a passive information worker into a dynamic more self-sufficient, more flexible knowledge worker. This transformation will require becoming what I call computer literate. By that, I mean simply understanding the basic principles on which computers operate, knowing how to use computer-communications systems (not necessarily how they work or how to set them up) and the strengths and limitations of computers. It will also require more communications skills, for, with much of the paperwork automated, more of the remaining work will involve face-to-face (or via computer conferencing or teleconferencing) dialogue, decision-making and negotiations. For women, it will also require special remedial programs in science and mathematics, perhaps designed for women only, and geared to what has been documented as their particular orientation in learning -- for instance, subjects in context, not isolated and abstracted.

Besides the drastic reorientation of attitudes required of women, both men and women have to recognize adult education as a new constant in their life. -- Rather like fitness, it is becoming a life activity. The idea of education as dialogue, as a dynamic process rather than a passive prescription, is compatible with this. Teachers must stress the process of acquiring knowledge as well as the value of keeping up with new knowledge, new techniques and new equipment in the individual's line of work. They must teach good research skills. They might also counsel students to join professional associations, subscribe to journals and attend conferences, in addition to coming to their adult-education classes, naturally. These strategies imply helping to evoke a commitment to a vocation or profession, or career, not just a casual attachment to a job.

In other words, the role of educators isn't changing a great deal: it is still to lead individuals in the learning process and to encourage commitment. □

MURRAY MARTIN

The Office: Computers and You

I suspect that if you are like me, many of you are a little apprehensive of yet another talk on the office of the future. I hope to not bore you into a solid state; rather I hope to suggest some new thinking not only about the office of the future but about our personal lives too.

I for one have endured what amounts to a media overkill when it comes to talking about automated office systems which will do away with secretaries, or about teaching machines which will eliminate teachers, or about robots which will reduce the workforce of General Motors to a president and a guard at the gate.

Well, secretaries are still with us, kids still go to school and I still see thousands of United Auto Workers on the premises of General Motors, Ford, and Chrysler. As you and I know, the office of the future has been talked about for some time now. But it is 1982 and we are still waiting. Or are we?

The management people of many companies have already moved into the office of the future but for the majority of Canadians, their offices remain much as they were years ago. However, where the move into the future has been accomplished or where it is well underway, there appears to me to be some common factors involved.

The first of these is that they share a driving need to boost productivity. They need to get more things done by the same number of people in a shorter period of time. The factor is compounded by their awareness that hiring more people to help those already on staff or in the shop is not the answer. As I said, the answer lies in boosting productivity. The automated office can help them do that.

The reason these people need to get more things done is the second factor: Competition. If you accept the principle that higher productivity means lower unit costs which translate into a marketing advantage, then you have the factor I'm talking about. Lower selling prices mean higher sales, by and large, and this is what our economic system is still all about.

The third factor at work is the mounting evidence that today's office worker has a greater capacity for production that he or she is demonstrating.

Survey after survey of office workers shows an efficiency level of less than 60 per cent. We did a study in our own office. The results might interest you. I found I was spending up to 40 per cent of my own time in meetings and that roughly half that time was wasted because the information needed to make decisions was not on hand. We had to wait for it, or meet at a later date. Our clerical force, as you might suspect, put on one whale of a work spurt when they first realized a survey was underway. But we sneaked a consultant with MTM know-how into the place and he eventually confirmed what you might suspect. Personal telephone calls and calls of nature, as he delicately called them, consumed up to 15 per cent of the time of a typical office worker. One on one gossiping takes between 5 and 8 per cent. Looking for a piece of equipment, finding reports, stationery, new typewriter ribbons and gazing out the window took another 5 or so per cent. Doing work over or correcting mistakes took and astounding 9 per cent.

Doing things that look like work - adjusting the typewriter roller, collating paper, standing at the office copier - a Monroe RL 612 of course - plus running errands for the boss or some other person in the office - these things take up to an additional 10 per cent of an office person's time. Then of course there is time spent getting coffee, cleaning it up when it's spilled and getting ready to go home.

And we think we are pretty efficient. But we are also human like you and your fellow workers; we believe our people are pretty conscientious and they do try to put in a full day's work.

But to return to my main theme. These three major factors - a need to increase productivity, the pressure of competition and the necessity of making the most of worker capacity - appear to be common to companies now taking advantage of office automation potential.

What kinds of technology are these businesses and government organizations now using, or in the process of acquiring? The technologies are data processing, audio processing, networking and people management science.

In my limited time, I do not propose to offer a mini course on hardware and software. In the first place, the information base at my disposal is too vast for verbal presentation and in the second place I doubt I could do it justice by myself. But I will deal peripherally with networking to the extent that I tell you my favorite definition of the automated office is that it is the optimal management of information and its proper intercommunication within a network of compatible machines such as computers, copiers, word processors and visual display units. To go a little further, the automated office should also be capable of communicating with other offices at the discretion of the user.

At the moment, many people in senior management still regard office automation as a means to do away with people and a means to deal mechanically with processes of high volume and standardized repetitive natures such as claims payments from correspondence, procurement, voucher and invoice processing, inventory and recording of receipts - the kinds of things Bob Cratchitt did for old Ebenezer Scrooge using a quill pen and a high bench desk with no stool.

Unlike the central data processor - the mainframe computer - office automation equipment doesn't have the very high initial entry costs which used to rivet senior management's attention and concern, in the same manner the coyote pays attention to the roadrunner.

The relatively low entry costs for items needed in office automation means that decisions to buy are often left to middle managers. The result , until recently, means that much equipment has been put into place without thought as to its compatibility with future directions of the automated office, without regard for a needs analysis in the first instance and a mechanism for before-and-after comparisons. Now, of course, many organizations are faced with the mind bending problem of inter-marrying systems which just don't even want to meet one another. In cases such as this, you can be sure that senior management is paying attention, closely, to office automation.

Reputable manufacturers, such as Monroe Systems for Business increasingly find themselves called upon by senior management to provide consulting service to help these people analyze their office automation needs and we do it with four parameters in mind - the nature of the people concerned with the office tasks, the tasks themselves, the organizational environment and the appropriate technologies to support the work.

> . . . information handling using automated equipment must be considered a basic unit of curriculum.

As the cost of capital investment per office worker nears the amount invested in a production worker, management finds its time well spent to examine what is possible in office automation. Today's executive can understand clearly what office automation means in dollars and cents. Let me offer you a simple example.

In the mid 1960s the cost of storing an executive's weekly writing output of some 30 memos and one 2,000 word report might have been $5,000. Low cost disc storage by 1985 will cut that cost dramatically to about $40. It is small wonder our industry expects the Canadian population of 150,000 computer terminals to multiply to about one million five hundred thousand by 1990, and according to the federal government, two and a half million by 1995.

Aside from the common factoring which appears to be pushing many companies toward office automation and aside from the mounting awareness and concern of senior management to what office automation can do, there is another factor at work, one with which this audience is increasingly aware. I refer, naturally, to the rapidly changing educational structure of our environment. Office worker help-wanted ads today demand people who are already skilled in office automation.

The pressure is on educators to produce people able to work in the automated office without having to go through a learning process. The need is now, I can assure you. Some estimates put on the job vacancy level for qualified operators of automated office equipment at about 24,000 annually. If the figure is right, and I believe it to be conservative, then in something less than five years, there will be more new automated office jobs than there are practical professional engineers presently employed.

For adult education purposes, I think the message should be fairly obvious. If the objective of adult education is re-entry or new training for the job market, information handling using automated equipment must be considered as a basic unit of curriculum. Some 65 per cent of today's high school students, across Canada, are involved now in similar data processing or computer science training. Half of them can even write simple programs. There is an active awareness by education ministries or departments. In Ontario, for instance, the council on university affairs has recently advocated running our centres of higher learning - universities, and community colleges - on a 24 hour a day basis to help that province keep up with the demand for computer scientists and technologists.

Even if management does not see the need for an automated office, including the value of executive work stations, the new systems and equipment will not work unless the people who should use them can see a measure of job enrichment. Like all new technologies, computers and automated information systems are changing the job mix in society, and this means tension and stress, mostly because older management doesn't particularly want to change. Change is inevitably threatening and for this reason, the acceptance of the automated office by many senior people is given grudgingly and reluctantly.

However, as more and more young people move upward in business and government this will change and in fact change will be sought more and more. This will be accelerated too, as the benefits of office automation are witnessed.

A number of office tasks may be handled by workers who stay home or are handicapped in some way and formally prevented from going to and from work. Businesses successfully adopting office automation will expand thus creating new jobs. The data processing industry itself, growing at some 30 per cent annually, will create many new jobs. Technicians and technologists associated with maintenance, servicing and adaptation work will be needed by the thousand.

For the future of the automated office, I see the ultimate, in my lifetime, of all information being available in all places at all times. It is not so impossible as it may at first sound. The interconnection of computers with existing communications links, now well underway in Canada, makes this scenario a virtual certainty within a matter of just a few years.

As a result our society will change, drastically. As University of Victoria professor David Godfrey says in Gutenberg Two, "**Authors will drift back into anonymity, librarians will gain vast new powers and respect, and teachers will teach themselves how to destroy cable-lines. We will all learn to become TV producers just as we once all learned how to write. The corporate mergers of the 1990s will be among advertising agencies, cable companies, publishers, telephone companies and data processing firms. Communications lawyers, of course, will become rich.**"

As major equipment costs continue their annual price decline of some 30 per cent, the average Canadian will begin to make extensive use of the technology of the automated office in his own home.

With the successful marriage of the video disc to the computer, we now have the technology for person to person access in voice and video plus imaging of data. Show and tell will move into the homes of the nation.

The technology **is** there. One example may illustrate the point. In 1965, one integrated circuit, contained 14 transistors, 10 resistors and two capacitors on a chip measuring 1/70th of an inch square. As photolithography developed in the 70s, so did reliability and mass production. We predict now that by 1985, silicon chips will carry roughly 1 million circuits on a chip measuring 6 inches.

But to return to the average Canadian and what is possible. We already have a machine which will read the pages of a book and speak the words. Now regarded as a boon only for the blind, as educators I know will agree, the tutorial possibilities are extensive.

> There is no question of stopping the office revolution.

Voice recognition systems, although now expensive, are already on the market and can recognize a growing vocabulary. As systems such as Telidon expand, it will become increasingly common for householders to enter into computer conversation with a computer to book a vacation, place a supermarket order, check a bank balance or enquire into the price of a new pair of shoes.

As circuitry becomes more miniaturized, the industry expects that by 1985, we will be making use of the Josephson effect of "electronic tunnelling" which will increase computer capacity by factors of 100 or 1000 or 10,000 thanks to superconducting switching devices that use infinitisimal amounts of electrical current.

The key to successful interaction, or networking in the office automation field will be the compatibility of computer languages and the use of physical wires and fibre optic cables such as are in place with the Trans Canada telephone system.

By 1983 your vocabulary is likely to include words such as teletext, videotex and of course telidon. Teletext is an information distribution method that makes use of the spare signal capacity on conventional television channels. Your TV set has what is called a vertical blanking signal. Approximately 22 lines of the 525 horizontal sweeps made by an electronic beam during the televising of a single "frame" of a TV picture are blank. With a telextex adapter connected to a TV set, the user can access up to 300 pages of information fed into the channel by the TV station. A problem is that wait time, on average, is 25 seconds.

Videotex is used to refer to systems which use the telephone network to deliver information. It differs from teletext in that it can be a two-way communication link. The user requests specific information and response can be virtually instantaneous. Its future application includes much of the interfacing I mentioned earlier, plus a lot more. Even Canada Post, for instance, is aware of Videotex potential in the field of electronic mail.

Telidon is the copyrighted name given to Canada's invention of an information distribution system capable of operating either in the teletext or videotex modes. However, telidon terminals incorporate a microprocessor identical to those which can drive many office machines. With the addition of a computer program, the home telidon terminal can also become a home computer.

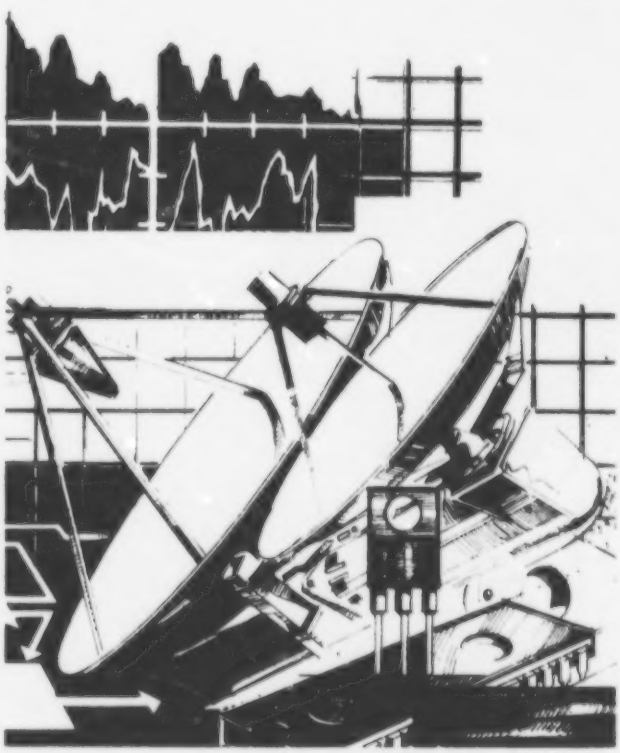
The technologies I have dealt with in a very peripheral manner are realities now and I should return to what is happening in terms of our offices and places of work. I think you will have a sharp perspective of the term automated office if you think of it in terms of witnessing the linkage and interaction of copiers, calculators, word processors, VDUS through a central data processor or computer. The executive or the office worker will activate one machine and all of the other pieces of equipment will respond as necessary, upon command or as programmed to communicate.

Perhaps on a positive note for educators, I should add that while the teaching of core computer skills is already a priority throughout Canada's educational systems at all levels, teaching of the humanities, other sciences, and the arts will remain most desirable. People will need help to understand what it is that their human actions do unto others and they will need understanding as they experience the impact of office automation on themselves.

Experience does show us that humanity has been able to pay itself more and more for doing less and less by means of improved productivity. It does seem ironic that the biggest impact of our new technologies is impacting most on our best educated people - those in positions of management or filling highly demanding office jobs. Conversely, many elementary service jobs - truck driving, cashiers, simple building maintenance, postmen and so forth - will continue to be innocent of effect by office automation.

As we continue to compress the time needed for technological improvement, it is apparent that there will continue to be a need for office workers to adjust. There is no question of stopping the office revolution. For most companies it is a question of survival. The only questions remaining are concerned with how soon and what specific equipment to buy or lease.

Retraining of office workers will only accelerate. Our education systems are addressing the subject now and well they should. The maintenance of our standard of living depends upon it. □



DAVID KILLINS

The Office: Computers and You

I am very pleased, Mr. Chairman, to have been asked to speak at the Spectrum '82 Conference. People at this conference are interested in a wide range of educational topics as they relate to adult education --- particularly the function and effect of computers in today's society and economy.
Today, I would like to talk with you about the role of the personal computer in bringing revolutionary change to computing, and to the socio-economic mosaic, including education.

The truth is that since the birth of the first computer, the ENIAC, in 1946, computers have, until recently, done little to boost **individual** productivity.

Throughout the 1960s, computers were still basically the private preserve of large companies and governments. Only the largest organizations could afford them.

And the people who designed, manufactured, sold and operated computers, and developed software, became cloaked in a kind of mystique. The non EDP oriented -- which, until recently, accounted for over ninety per cent of the population -- have regarded the computer as a mysterious, slightly hostile, and somewhat impersonal "Big Brother", which was beginning to control their lives and actions.

Even top management has found it difficult to understand whether they were getting meaningful results from their company's computer systems. What they usually get is a lot of paper and a lot of numbers.

The basic problem, then, is that until recently, managers have not been affected personally by the computer. While their secretaries may have been entering data into a computer and communicating with it, most managers have still not touched a keyboard.

The invention of the microprocessor in 1971 began to alter this lack of feeling of control over the man-computer relationship. At last, it was possible to build much smaller computers.

It is true that in the 1970s, the proliferation of intelligent terminals, distributed data processing, data bases and computer communications allowed an increasing number of professionals and clerical workers to access their computer from their desks. But there was still an impersonal element about it all. Many still felt that they were simply cogs in the machine, mere nodes on the network, so much cannonfodder for the company system. And the prospect of the computer playing a meaningful role in education still seemed a little remote.

Then in 1977 came the instrument of change: the affordable, personal desktop computer -- a computer that an individual could finally own, operate and control.

It started a revolution.

By 1979, several hundred thousand personal computers were in operation in business, homes and schools throughout North America, and to some extent in Europe.

Furthermore, these computer appliances -- as they came to be called -- were sold through retail computer stores in shopping centres or on the corner.

At the time, many professionals in the computer industry regarded the rise of the personal computer as a passing fad like the hula hoop.

However, it proved to be just the opposite. Owners of small enterprises found that they didn't have to spend thirty to forty thousand dollars on a computer. They could buy a system from Apple, Commodore or Tandy with the requisite applications software for less than ten thousand dollars. Business programs like VisiCalc spurred the penetration of the small business market. Furthermore, these programs gave managers insight,

not just numbers. With a low-cost program, a professional or business owner found he could project the numbers in graph or chart form -- on his very own system on his desk. An individual could finally innovate with very little risk, and increase his business return at the same time.

Since most managers spend two thirds of their time creating, analyzing and communicating information, the personal computer is obviously more than a ray of hope for managerial and professional productivity.

At the same time, educators began to discover the personal computer as a teaching aid. This was significant because, for nearly all educational institutions, it was the first time an affordable computing device had been available for the classroom.

Since 1979, demand for personal computers in all areas of the economy has soared as fast as the personal computer manufacturers could increase their production. An industry of micro-software developers has sprung up to feed the applications demand. Many users have become their own programmers.

Over 300 companies now produce and distribute Apple-compatible software and peripheral products, more than for any other personal computer manufacturer. In fact, we have identified over two thousand five hundred programs --- including some packages we have developed ourselves --- that have been written for Apple computers. And there are many more thousands out there.

The only boundaries restricting the application uses of a personal computer are the limits of human imagination and creativity.

Personal computer hardware has grown in capacity and sophistication. And, allied with an array of software support covering database access, telecommunications, modelling capability, word processing and graphics, the personal computer has become a user's window on the world --- a human amplifier to assist in one's daily tasks.

Such high-level amplification can often change a work process or system entirely. For example, we feel, with some confidence that our own organization is the most computerized corporation in the world. Throughout the entire company worldwide, there are no secretaries in the traditional sense, and only a few dozen typewriters. Virtually every one of our three thousand employees has an Apple computer on his or her desk.

Admittedly, the company does use a number of medium-scale minicomputers to carry out corporate financial reporting and to retain very large databases. However, within the limits of their individual authorization, all our employees can access the databases of those larger machines through their desktop Apple. An employee can also dial up the systems of other employees on the company network or access public databases. So in a very wide sense, we practice what we preach.

> the more basic lower-cost personal computer will become even more popular

With these current capabilities, we feel that our own organization is already working in the office of the future. With a computer on every desk, the location of information resources is immaterial to the users. And it doesn't matter where the employee is located.

In fact, authorities have suggested that the personal computer may eliminate some offices entirely in the future with key managers working from home using a computer and a telephone line.
As an increasing number of managers and professionals start using the personal computer, there's going to be a rise in managerial productivity.

Within two to three years, as organizations install personal computers, terminals and other automated equipment on managerial desks, individual managerial productivity will start to rise. Average expenditure per manager on such tools will rise to ten or fifteen thousand dollars. A large part of this expenditure will be on microcomputers in the under twelve thousand dollar range.
The personal computer is simply awesome in terms of its potential for productivity improvement. The only constraint on individual productivity is a person's ability to learn how to use the machine as a productive tool.

The personal computer has forced a fundamental change in the computer vendor-to-customer approach. Traditionally, the vendor has said to the customer: "**Here's how we intend to solve your problem.**" The personal computer vendor, on the other hand, says to the customer: "**Here's how you can solve your own problem.**"

It is obvious that a growing number of individuals prefer this approach.

In 1981, approximately one million personal computers were in daily operation in the world. By 1985, that figure is expected to quintuple to five million systems. In terms of dollars, 1981 retail sales of personal computers approached one billion dollars. This market is expected to grow to five billion dollars by 1985.

In Canada, about 100,000 personal computers were estimated to be in operation last year, and this figure is expected to more than double in 1982.

In the future, the more basic lower-cost personal computer will become even more popular because it will become even more user friendly. The next generation of personal computers will, therefore, expand their application capability to an even wider range of potential users.

A major issue in the forefront of all discussions of the fully automated integrated office today is what effect such computerization will have on employment.

> "... computer-assisted instruction is a powerful motivator for students of any age."

Like the Luddites who smashed the textile machinery at the start of the industrial revolution because they feared it would put them out of work, so some anti-technology alarmists are predicting that the computer will create massive unemployment. They prognosticate even direr consequences for employment opportunities when all office functions are automated and interrelated.

What are the facts?

The latest studies indicate that the proliferation of computerization is **not** creating unemployment per se. Many thousands of enterprises have been created that would never have existed before the computer. And many new kinds of job opportunities have opened up because of the computer.

I believe that what is happening is not the creation of unemployment, but the transformation of job classifications, a redistribution of work activities, and a change in the types and levels of skill and educational requirements to carry out these jobs.

For example, according to a study by University of Calgary economics professor, S.G. Peitchinis, the spread of computer technology is not likely to create widespread unemployment in Canada. Based on more than six years of research, the study says that where job losses due to computerization have occurred, these losses have been offset by creation of computer-related jobs elsewhere in the economy.

In his report, Professor Peitchinis singles out Alberta as a typical example. He points out that the widespread introduction of computers in this province over the last few years has been accompanied by persistent shortages of man --- and woman power --- particularly in office, professional, managerial and computer-related occupations.

In varying degrees, this is the case across the country. At latest count, well over a million Canadians are unemployed. Yet the newspapers are full of advertisements for skilled managers, professionals and technicians. The information industry itself is facing the most acute shortage.

For example, Jean Grandpre, chairman of Northern Telecom, said recently that Canadian companies will be facing a crippling shortage of trained people in the 1980s. He said his company alone will have to recruit 400 scientists, engineers and other professionals every **month** for the next five years in almost every discipline and profession. All other computer and computer-related organizations face proportional recruiting challenges.

Over the past 30 years, the Canadian economy has been shifting from a predominantly goods - and raw materials-producing economy to a predominantly services-producing economy.

During the 1980s, as computerization continues --- particularly in the use of personal computers --- the economy will undergo a transformation into a full-scale information/communications bases economy.

Computers, particularly personal computers, are, as I mentioned earlier, having an impact on both the nature and range of work-related activities. For example, computerization of accounting systems has made significant reductions in the amount of work related to data entry, report production and balancing functions. At the same time, however, the computerized system has dramatically improved access to information. The ease of obtaining automatically-generated statistical reports has led to opportunities for more in-depth analysis of information.

Our economy, therefore, is moving through an unprecendented wave of change with respect to employment opportunities in new kinds of job classifications. At the same time, the door is opening less frequently --- or closing altogether --- for those in many older, traditional occupations.

It is not inconceivable that by 1990, a major proportion of Canada's working population will be directly involved to some degree with information processing and analysis functions in their jobs.

I predict that by the end of this decade, three or four out of every 10 people making a living in this country will be operating some kind of microprocessor-driven device most or part of the time in their jobs. The machine might be a traditional computer terminal or console, a word processor, a data display phone, a process control or robotic device, or --- a personal computer.

An increasing number of people will be directly involved with the information industry itself in sales, service, programming, communications and other specialities. There will be much greater demand for computer consultants, market analysts, lawyers, auditors and security specialists. Secretarial and administrative staff will be expected to know, or learn how to operate word processors, transaction terminals or personal computers.

In the future, virtually all managers, professionals, technicians, and even educators -- whatever their field -- will have to know how to use computer resources to access and analyze information. This will eventually become a requirement of the job. It's already starting to happen, but, as yet, we are only seeing the tip of the iceberg.

This changeover to a fully-integrated informatics society is accelerating and, in the process, is placing heavy demands on the economy for a redistribution of skills. This is placing an unprecedented responsibility on education --- not only at the traditional school, college and university levels --- but also on governments to provide funds, and on industry and business to provide training infra-structures.

Investment in new computerized training projects both in educational institutions and for in-house programs in business organizations is rapidly becoming as important as investment in products and services.

I firmly believe that the personal computer offers education, business and industry a fantastic opportunity to help smooth out the dislocations along the path to the informatics age. It is already assisting hundreds of thousands of owners, managers and professionals in small business. It is adding a new dimension to research activities in every kind of discipline from medicine to zoology. It has helped spawn many new small enterprises and is even assisting farmers and ranchers. The personal computer is also now starting to be recognized as an important tool in aiding managers and professionals in their jobs in even the largest corporations.

But in no other area is the personal computer having a more dramatic impact than in the field of education. As a tool for motivating student learning and for assisting to increase teacher productivity, the personal computer has no equal.

Our own organization is expending considerable resources and effort in this field. We work actively with many third-party software firms and educators to develop educational courseware packages for use with our computers.

And, in 1979, Apple established a non-profit education foundation to support the development of microcomputer projects in education and training, including vocational projects. To date, the foundation has underwritten over six hundred thousand dollars' worth of computer-assisted instructional development. Award opportunities are as open to Canadian educators as to those in the United States.

If my projection comes true: That by 1990, up to 40 per cent of Canada's working population will be operating some kind of computerized device to handle their jobs, then the need to teach computer literacy and use computer-assisted instruction is vital to the very future of our economy.

Computer literacy simply means understanding what a computer is, and how it basically operates. The use of personal computers for computer-aided instruction in education is resulting in productivity improvements of up to 35 per cent. On top of that, computer-assisted instruction is a powerful motivator for students of any age. It can also increase the understanding of subjects that might never be mastered under the old systems.

I'll give you one example as presented in an article in Educational Digest, Canada's premiere publication to educators. The article discusses the experiences of a teacher in the Special Education Department of the Ontario Institute for Studies in Education. This teacher assists other teachers by using Apple personal computers in special classes for students with learning disabilities. I think that what she says can be of significant import to those of you involved in adult education programs. The basic premise, I submit,

applies equally to students of any age.

She says, and I quote: "**We use the word processing capabilities of the personal computers to help those students with writing and composition skills. Prior to installation of the computers, some of these students wouldn't even attempt to write a composition. Now, they are so motivated that they produce more writing assignments than we ask them to do.**" End of quote.

My point is: If the personal computer can do such an outstanding job of motivating students with learning disabilities, then it is obviously a powerful force for motivating all students, young or adult.

If we don't educate our students --- both the young and the mature --- in computer literacy and use computer-aided instruction to motivate them, how are they going to cope with our increasingly computerized world?

I regard computer literacy and computer-assisted instruction in all our educational institutions as vital to the future of this society and this economy. For Canada to survive economically and flourish as a culture in the increasingly competitive international arena, it is imperative that the present generation of Canadians understand the computer.

Other countries realize its potential. Japan, for example, is establishing computer-aided instruction throughout its entire education system from elementary schools to universities. It is raising an entire generation to be computer literate. Canada has to do the same. In the new world of informatics, the computer, the educational process, productivity improvement and the health of the economy are linked together like a fine delicate chain.

We must not only train our youth to become computer literate so they can face the future with a degree of economic confidence, we must also retrain many of the adult generation to enable them to deal with the realities of today's increasingly computerized environment.

For those of you involved in adult education projects, your responsibility is particularly acute. It is difficult for an adult individual to change work habits, thinking patterns and accept new concepts. It is an even greater challenge for adult education teachers to inspire and motivate those students to master new subjects and readjust their approach.

So I would leave you with this appeal: Examine the potential of the personal computer as an instrument of change in its capability to motivate your students. Explore its possibilities for personal productivity in your teaching role. Let the personal computer work for you, just as it is working for many tens of thousands of managers, professionals and other educators. It will be a willing teaching aid. □

MIKE SZABO

Computers: Programming Adult Education

Educators have acquired a great deal of knowledge during the past 15 years about how adults learn. But is this knowledge being applied? The author contends it is not. Several learning characteristics of the adult learner are reviewed and the role of computer based learning in meeting those needs is outlined.

Adult Learning Requirements

For purposes of this paper, I will define adult learning requirements (ALR) as those individual or group characteristics of adults which, in a learning/training environment, have a demonstrated effect upon what adults learn and how they approach or avoid a learning or training program.

The Adult as Information Processor

One of the dominant learning theories of the century has had a major influence on the way educators think and deal with students. The operant conditioning views of Skinner and followers have made such concepts as 'reinforcement' a household word with educators. A body of research is now being accumulated which raises serious doubts about whether operant conditioning is a valid representation of how adults learn. Our common sense also tells us that adults learn better when they are actively engaged in the learning process. This recent view of the adult learner is called information-processing or, if you prefer, mind-active learning.

Traditional educational methods are built upon transmission of information from the teacher to the student and are hence called information-transmission models. To aid learning based on information transmission, we often resort to rules of operant conditioning, including that most respected tool, reinforcement. Now there is an alternative approach which allows us to maximize the amount learned by encouraging the learner to actively 'process' information.

The information-processing model assumes the learner approaches a situation with a well-developed set of ideas and concepts stored in the mind. When presented with new information, the learner will acquire that information only to the extent that he/she can integrate it with what is already available in the mind. While we as educators cannot know the exact details of our students' cognitive structures, there is a great deal we can and do know about certain actions we can take to make the learner a more effective and efficient information processor (and better learner).

What do We Know About Manipulable Aspects of Adult Learning Requirements?

The simple answer is plenty. Researchers have spent large amounts of time on acquiring information about how adults learn but have not yet published in applied terms the results of that research. It makes sense to focus upon those adult learning requirements which can be manipulated by educators. If a student is undergoing a divorce and the trauma is affecting his/her academic work there is little we can do besides being sympathetic. There are however many ALRs which can be modified by educators. Several of these will be discussed below.

Vocational training

Several studies have shown that adults typically seek vocational training as opposed to academic or recreational education. We certainly can and do respond by providing vocational training emphasis in our adult learning programs in the Province of Alberta.

Prerequisite knowledge

Of all the variables that affect what a student learns, one of the most important is the amount of prerequisite knowledge and skills that student possesses at the beginning of a learning program (Bloom, 1976). Time and time again we have seen students fail because they do not have the prerequisites that are required for a training program.

Learner control

It is well known that adults demand and take control over what they learn. There is some research evidence that when adults exercise some control over the actual learning process, they learn better and retain it longer. For example, practicing the skills to be learned helps the learner to master the concepts or skills being taught. If a student can increase the amount and frequency of such practice, he/she will learn more.

Competency based

Adults prefer to receive training which will help them achieve vocational competencies. In addition, they prefer to be evaluated relative to those competencies rather than how they did compared with others in the class. In a truly individualized learning program, there may not be any 'others' at any point in time for comparison. Buried in this discussion is the fact that some adults prefer a cooperative versus a competitive training environment. A program based on competencies often embodies a cooperative environment.

Mastery

The concept of mastery learning is simple and powerful and based on several research programs. In the applied sense, mastery means that the learner is expected to demonstrate knowledge or competence in any part of a course before being permitted to attempt the next part (Bloom, 1976). Mastery is very important for those courses in which successful learning of any part is dependent on successful learning of previous parts of the course.

Guidance

I am going to focus on guidance during the process of learning as opposed to career guidance. When the student is engaged in acquiring competencies, there is a need to know which competencies have been met and which have not yet been met. Traditionally we rely on the student to make this determination: we use tests primarily to evaluate the student and give a grade, rather than as a diagnostic tool. There is considerable evidence that when a student is allowed to terminate instruction during a learning sequence, the student usually terminates before he/she has acquired mastery (Tennyson, 1982). We need to find ways to give the student valid and frequent information about his/her progress during learning. If the information-processing model is correct, the student will utilize this information and recognize the need for corrective action. At this point, further guidance may be necessary. Thus, guidance is seen as an iterative and never ending process in which the teacher and student progressively zero in on and eliminate inadequate learning.

Self-pacing

When adults are forced to complete a program of study at a pace set externally by the instructor, the tremendous variation in learning rates are not evident. It is only when we allow students to pace themselves that we see the five-to-one learning rate variations (Bloom, 1974). The effect is so powerful that someone has defined aptitude as the time it takes a student to master something we have to teach!

Because of the variation in learning rates, when students are allowed to set their own instructional pace they complete the instruction in 20 to 50% less time, on the average (Kulik, Kulik, and Cohen, 1980). This finding is consistent and accompanied by no loss in learning. If we are interested in increasing the learning efficiency of what we are doing, self pacing has much to offer.

Feedback

The area of learning most profoundly affected by reinforcement ideas is feedback. It is commonly believed that positive reinforcement after practice examples and tests will lead to better performance later on. The fact is however that feedback has its greatest influence when given after incorrect responses or practice. Feedback given after correct responses has little if any effect upon how much a student will retain.

It seems that feedback works on in information-processing approach in that it provides corrective information which the student can use to take remedial action. Further evidence comes from delayed feedback studies. When feedback is not given immediately after practice, students spend more time studying the feedback and score higher on retention tests, regardless of the 'reinforcement' they receive (Kulhavy, 1977).

Does this mean we should not be supportive of our students when they have learning difficulties? Certainly not! The point is that we can now go beyond simply being supportive and use feedback to help students exercise some independence from teachers and learn more in the process!

Flexible study time

Probably the greatest barrier to further adult education is the unavailability of instructors at times when the learners can engage in instruction. Due to work and family schedules, adults cannot easily meet schedules which are convenient for instructors. Evening courses

have proliferated in an attempt to ease this problem. The ultimate solution will come when students can complete the majority of their learning individually and on their own. Evidence that this can and has been done successfully will be presented later in this paper.

Questions and practice items

One way to utilize feedback is to provide for extensive practice questions and items during instruction. These 'embedded' questions have instructional value of their own however. It has been shown that when questions are embedded in text materials, and students process those questions, learning is significantly improved (Rothkopf, 1974) also, questions given before the study of text materials can be useful in helping students focus on the important parts to be learned and de-emphasize the less important parts.

Instructional objectives

Instructional objectives have been greatly misunderstood and mis-used by educators since their appearance in recent years. First, they should be treated as evidence that learning has occurred. Secondly, it has been conclusively shown that students who receive and study objectives before studying lessons will learn more as measured by tests (Duchastel and Merrill, 1973). Thus it is clear that the simple act of having students study the objectives is an effective learning aid.

> . . . schools as we know
> them today
> will not exist
> by the year 2000.

Graphics

My own research into graphics shows the power of graphics to improve learning. Specifically, we began with textual materials designed to teach concepts about the human heart. We added graphics which depicted those points in the text we wanted students to learn and found that the graphics version resulted in significantly better performance in visual and conceptual criterion tasks (Szabo, Dwyer, and DeMelo, 1981).

We then took the study one step farther and added the same graphics to one version of the test. There we found that for visually oriented tasks (location of the parts of the heart on a diagram), students did better if they had the visual test. No differences were found for non-visual tests.

Individual Learner Differences

Providing effective instruction to meet these adult learning requirements is immensely complicated by the fact that in each of these requirements there is tremendous individual variation among our students. This variation cuts across vocational training needs, prerequisite knowledge, learner control, specific competencies to be attained, level of mastery, guidance needed, pacing rates, feedback, study time, questions, objectives, and graphics.

As an example, when students are allowed to set their own learning pace, some will complete mastery and take 5 times as long to do it as others. Providing feedback after practice questions is another obvious example. Each learner will exhibit a unique pattern of correct and wrong answers to a set of questions. Since the research suggests that we should concentrate feedback efforts on the wrong responses, we are faced with an impossible task of doing that for each individual student.

Management of Adult Learning

The task of effectively addresssing adult learning requirements under these conditions of individual variation poses a new and different requirement for adult educators. In general, it requires a major shift from teacher centered and group paced learning to student centered and individually paced learning. Two components that must be addressed are curriculum requirements and managing the whole learning process.

Curriculum Requirements The curriculum requirements are not well understood at this time. It appears that what is needed is a curriculum structure which is modularized. Each module consists of a self-contained unit which teaches the content or process associated with a particular set of objectives or competencies. Each module includes instructions, assessment items on which to judge competency, several alternative forms of instruction, and directions how to proceed within and between modules. The instructional content of the modules must have been validated with actual student trials. Thus, the adult can come to the learning situation and select which modules he/she needs to study in order to meet a desired set of goals. The student acquires guidance in the selection process through an understanding of his/her own goals, guidance from the instructor, and performance testing on the competencies to be attained and their prerequisites. One should not feel that such a learning system is far fetched or futuristic: indeed such a curriculum now exists on PLATO for adult literacy training for adults who function between grade 3 and 12 in math, reading, language, social studies, and science.

Logistics Management The problems of managing thirty students doing thirty different modules at the same time and providing meaningful guidance and support to each individual is a logistics problem of immense proportions. Doing so is a tremendous drain on the instructor. Less than 40% of the instructor's time goes toward teaching and over 60% toward management functions in remedial instruction (Poore, Qualls, and Brown, 1982). Fortunately, the modern high speed computer can solve these problems. It does so through its capacity to track and record the performance of each individual learner in a highly detailed fashion and provide individualized response to each decision taken. It diagnoses each student's specific strengths and weaknesses and prescribes alternative learning activities to help the student meet his/her own set of competencies.

Computer Based Learning

Computer Based Learning (CBL) is the delivery of learning systems materials to individual students. It consists of two major components: Computer Assisted Learning (CAL) and Computer Managed Learning (CML). In the former, the computer acts as an individual tutor to the student teaching and testing in a patient manner. In CML, the computer manages the learning program of each individual student through a diagnostic and prescriptive learning system. CBL is individualized and can keep and provide detailed record keeping for instructors and administrators. In addition, individual student records can be made automatically available to students at any time. The routine of keeping a gradebook can be dispensed with!

CBL Meets Adult Learning Requirements

Earlier in this paper I mentioned 12 different adult learning requirements shown to be important in the learning process. CBL has been demonstrated to meet each of these ALRs in applied learning situations. Furthermore, it does so in a highly individualized way, capitalizing on the ability of the computer to function effectively in the learning situation.

For example, when an instructor decides upon the specific prerequisites for a learning package, the computer can be prepared to diagnostically test each student on all the prequisite competencies. Thus the instructor can know which students require which learning prior to the start of the actual instructional program. Furthermore, the testing program is done automatically, including grading, scoring, and interpreting.

Is CBL Effective?

This question is usually asked by someone who is investigating CBL. It is an important one but should be preceded by the corollary question "**What evidence is there that the current way I am teaching is effective?**" CBL is 20 years old and substantial amounts of research have been conducted. One of the most recent publications reports on a summary of 79 studies in postsecondary education which compared CBL with other forms of instruction. It concluded that CBL results in small but significant gains in achievement and significantly more positive attitude toward the content and method of achievement. But the most clear cut finding of all is that students' learning time is reduced by 25-50%! (Kulik, Kulik, and Cohen, 1980).

I find this amazing because of two factors. First CBL is relatively young and much of it does not systematically incorporate ALRs. Second, the large majority of learning research through the years has yielded nonsignificant findings. In spite of its infancy, CBL seems to have earned a place in training adults.

Barriers to Widespread Use

There are several barriers to widespread application of CBL. The vast majority of these problems fall into the category of political/administrative. The technological problems, at least with the PLATO system, have all been successfully addressed. One political problem is that administrators and faculty are unaware of the tremendous role that CBL will play in the fields of education and training. As a result, they refuse to spend enough time with CBL to acquaint themselves with what it can do, i.e., what needs it can solve in education.

A second barrier is that CBL, because it can meet ALRs effectively, is a medium which is individualized and learner centered. Our current educational system is group paced and centers around the teacher. It will require major reorientation of educators for them to see how CBL can be used.

It has often been said that computers can't replace the teacher for teaching is basically a human act between humans. While anyone who advocates CBL realizes the need to adopt this position (and I personally subscribe to its merit) we must plan for the possibility that schools as we know them today will not exist by the year 2000 (Papert, 1980). The fact of the matter is that CBL programs have been mounted which can and do replace the teacher completely. The technological possibilities and political realities of such a venture are clearly in major conflict.

Another reason that CBL is not widespread today is that there is always a time lag between discovery of an innovation and widespread adoption. For high technology, such as the laser, that time lag is about 20 years. For educational innovation, it is about 50 years.

Since CBL is a high technology educational innovation, its widespread adoption should occur between 20 and 50 years afters its invention. It is interesting that CBL was born 20 years ago. I predict major inroads for CBL in the next decade.

Cost has been cited as a barrier to CBL. This factor is very deceptive for several reasons. First, we don't know what our present mode of postsecondary learning costs. If we made a careful anaysis of current costs, my speculation is that we would be amazed by the staggering costs of doing business 'as usual'. More importantly, the costs of computer hardware are rapidly dropping and are predicted to continue to decline for at least a decade. Costs of our current mode of instruction are tied to teacher salaries which are rising at a rate equal to or greater than inflation. It appears that those cost curves can and will cross, giving the advantage to CBL.

One cost factor related to CBL is the production of courseware, still very much a labour intensive operation. In the next five years, software systems which significantly reduce the manpower required to produce good quality courseware will appear on the market. These packages will further accelerate the day when the cost curves cross. I might add that such a package now exists on PLATO. It permits an instructor to build a complete CML system with no knowledge of any programming language whatsoever. For those interested in man-machine interactions using perfectly natural language, this system deserves examination.

Conclusions

In this paper, I have tried to show that our current mode of instruction of adults falls short of quality instruction. There are several factors known about how adults learn which call for re-thinking of the way we organize our curriculum and manage its implementation. Without the power of the computer, we are doomed to continue our current and outmoded methods of instruction.

The Age of Innocence

A Japanese manaufacturer dumped industrial wastes into drinking water and caused horrible birth defects in the population. He did so not knowing of the horrible consequences. Some would argue that he was 'innocent' of wrongdoing because he didn't know better. Today, all manufacturers know the consequences - they are no longer innocent. Now that you have heard this presentation, you are no longer 'innocent' of knowledge of valid methods of teaching adults nor are you innocent of knowledge of how these methods can be carried out using CBL. Welcome to the 'Age of Accountability'.

Societal Dislocations

The technological revolution will have several major impacts on society and the devastation may be severe. First, the Province is faced with severe manpower shortages in the skilled areas. Many adults who aspire to training for these positions do not possess the basic skills to permit them to be trained successfully. Another factor is the rapidly growing service sector of the North American economy. The biggest consumable of this sector is education/training. The demographics of our population show decreasing graduation rates due to the end of the baby boom. Alberta's graduation rate is expected to drop by a modest 11% between 1980 and 1990. The implication is that we will have to do more training with fewer resources. The efficiency afforded by CBL cannot be overlooked in this need.

Finally, it is clear that clever technology will rapidly replace people in jobs, much as robots are now being added to auto assembly lines. The good news is that technology will create more jobs than it displaces. The bad news is that those displaced will have to have extensive retraining in order to fill the new jobs created. Once again, the technology of CBL holds the potential to provide a significant proportion of this retraining.

Will we as adult educators be able to step in and deal with these problems facing society? What will be our response? And will we attempt to prepare ourselves with the best and most appropriate technology to help us solve these problems? It is my hope that the answer will be yes. □

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GAYLE HUDGENS

Left Brain ~ Right Brain Hemisphericity and Its Implications for Learning

Over the last couple of decades as neuroscientists have been analyzing the specific functions and strategies of the cerebral hemispheres of the brain, their work has fostered knowledge which now appears to contain significant implications for those responsible for training and development. Findings from the brain sciences suggest not only that the hemispheres of the brain specialize in different ways in their processing of information and in their learning and problem solving strategies, but also that some learners may be more dependent upon one type of processing than the other.

Hemispheric specialization theory, the conceptual framework undergirding research on localization of brain function, has been corroborated through repeated experiments on split-brain patients and stroke victims. In 1981, neurosurgeon Roger Sperry won the Nobel Prize for his research breakthrough made in the 1950s at California Institute of Technology. Using various techniques (magnetoencephalographs, radioisotopes or sodium amytal injections, tachistoscopes, dichotic listening devices, to name the most reliable), researchers have suggested that the **left** hemisphere in most individuals not only specializes in language function, but it also performs linear, analytical, algorithmic, sequential, temporal, and logical computations. It seeks out details rather than perceiving wholes.

The **right** hemisphere, on the other hand, in most people appears to specialize in synthesis, nonlinear and holistic functions, and gestalts. Its forte is images, pictures, faces, spatial and holistic patterns. Nonverbal tasks, music, art, the humanistic/mystical part of civilization may have their roots in this hemisphere. The pop proponents of this theory go so far as to suggest that the right hemisphere is the seat of creativity and intuition, visuo-spatio and perceptual.

Some research, however, suggests that the division of function may not be quite as clear cut as the dichotomous theory of hemispheric specialization suggests. The right hemisphere may be much more involved during speech than previous research on tissue damaged patients has indicated, according to Scandinavian neuroscientists Lassen, Ingvar, and Skinhøj. Gazzaniga and LeDoux have questioned the unitary nature of each function. And research on sex differences in spatial abilities has suggested that in females the physiological correlates of verbal functioning may be diffused across the two hemispheres in ways we do not yet clearly understand.

To complicate matters even more, we now know that the electroencephalogram is susceptible to false readings, detects electrical changes **outside** the brain cells, and is fundamentally imprecise in pinpointing brain activity. Much of the research on hemisphericity in the last decade has used the encephalographic technique, all of which now must be questioned. The newer MEG technique (which uses the magnetoencephalogram), however, holds great promise in probing deep within the folds of the brain and its cellular structure, without surgery or danger.

Notwithstanding these difficulties, back in 1978 and 1979 I hoped to learn whether the "brain storm" was a bandwagon phenomenon or whether hemisphericity held significant implications for educational effectiveness and for training and development. Shocked by the relationship between adult illiteracy and street crime or welfare and challenged by the unconscionable attrition rates among certain adult students, I set about doing dissertation research, the major hypothesis of which was:

Remedial students tend to be more right hemisphere oriented than left in their habit of thought and in their cognitive processing. Conversely, regular academic students tend to be more left hemisphere oriented than right.

In addition, I posited that there would be high and positive relationships between right hemispheric preference and remedial groupings, low reading level, English as a second language, males, and ethnicity.

If some adult learners tend to be specialized differently from the norm, then those of us who deal with ill-prepared students of ill-trained employees need to be apprised of any evidence that learning strategies may be related to hemispheric specialization. More importantly, we need to be made aware of the best ways to accommodate these different modes of learning. If research were to discern a possible association between the tendency to respond more from a right-hemispheric point of view and the need for remediation, such a finding should increase our understanding of learner needs; suggest optimal means for fostering basic skills; provide leads for initiating, implementing, and evaluating programs; and thereby lead to important implications for program changes, curriculum re-design, and policy decisions.

Previous Research

In the context of a discussion of hemispheric specialization theory and research, and ways in which certain findings can be brought to bear on theoretical and practical problems of training and development, a chronological pattern is most instructive, particularly since the theory has been evolving for more than a century.

The first extensive recorded description of the cerebral hemispheres was written by Vesalius in his 1543 tract, **Da Humani Corporis Fabrica**. In 1664 Oxford professor of Natural Philosophy Thomas Willis published his **Cerebri anatome** which contained a theory positing the first physiological correlate of imagery. Zinn in 1749 noted that the deconnection of the bundle of nerve fibers connecting the two cerebral hemispheres (the corpus callosum) in a dog had no effect on motor or sensory function. Marie Antoinette's physician, Felix Vicq d'Azyr in his 1784 **Historie de l'Academie royale des Sciences** suggested that the connection between hemispheres seems **"To be destined to establish sympathetic communication between the different cerebral parts."**

The "Magna Charta of Neurology" was privately published in 1811 by British physiologist Sir Charles Bell. His **Idea of a New Anatomy of the Brain** proposed a number of concepts and principles which remain basically accurate today. More famous than Bell was his contemporary, Franz Joseph Gall, best known as the founder of phrenology, the now debunked pseudoscience of determining character and mental faculties by analyzing the bumps on the skull. Nevertheless, he made several significant contributions to the history of science, among them, the concept of cerebral localization. Although Dr. Paul Broca usually receives the credit for fathering the theory of hemispheric specialization, with his presentation of a lesioned brain to the Paris Anthropological Society in 1861, both Gall and Jean Baptiste Bouillaud (a founder of the Paris Société Phrenologique) compete for that honor. What Broca pointed out that was new to science was that the **left** hemisphere was the seat of speech function. Broca's discovery that speech difficulty following a stroke correlated with a lesion in the left hemisphere of the human brain has been corroborated numerous times in the intervening years.

> Programmed instruction may be the worst culprit . . .

The first important corroboration occurred in 1881 when a young German neurologist, Carl Wernicke, postulated a **posterior** speech area in the left hemisphere, later to be called "Wernicke's area." When damaged, this area impaired comprehension but left spontaneous speech intact. The clinical picture was reversed when the area Broca dealt with was injured.

A dispute between the "localizers" and the "holists" (who saw the brain as a single integrated unit without functions located in discrete regions of the brain) lasted from about 1906 (with the advent of Pierre Marie's new theory of holism) until the middle fifties when the American behaviorist school led by Karl Lashley claimed the brain to be "equipotential."

With the breakthrough made in the 1950s at California Institute of Technology by neurosurgeon Roger Sperry and his colleagues, Michael Gazzaniga and Jere Levy-Agresti, functional localization appeared again to be a valid way to view the brain. Split-brain operations on epileptic victims performed by Philip Vogel and Joseph Bogen in the early 1960s provided dramatic demonstration of the differences in function between the left and right hemispheres. By 1972 what was now was the confirmation that in most (but not all) of the cases of

language disorder based on brain damage, the damage was located in the left hemisphere: "**Only rarely does damage to the right hemisphere lead to language disorder**" maintained Geschwind, who dispelled the belief that the two hemispheres were symmetrical in structure. He found that the planum temporale, an extension of Wernicke's area, was larger on the left side of the brain in 65 percent of the cases he tested, equal in 24, and larger on the right side in 11 percent. Wada confirmed these findings on the basis of dead infant brains suggesting that asymmetry may be genetically determined.

In 1973 Karl Pribram and Alexander Luria edited **Psychophysiology of the Frontal Lobes**, in which Luria expressed his skepticism of a mere dichotomy of left and right hemispheres being sufficient for understanding how the brain functions. For him the frontal lobes are the sites of "higher intelligence", of satisfaction from art and literature and of spiritual understanding; in essence, they integrate both sides of the brain in a union making possible not only past experience, memory storage, and the processing of sensory information (which takes place in the two hemispheres), but also allow the individual to plan for the future, a capacity no other species shares.

Scandinavians Ingvar and Lassen produced a remarkably convincing volume in 1975, **Brain Work; the Coupling of Function, Metabolism, and Blood Flow** in which was reported a new technique for studying brain function during various kinds of cognitive and emotional tasks. By injecting Xenon 133 into a subject's carotid artery, an on-line computer can measure (through special detectors attached laterally to the hemispheres) the regional cerebral blood flow (rCBF) within up to 64 regions of the brain and transform the initial or average flow into a graphic display illustrating that blood flow changed dramatically "from rest to pain, to reading, speech, problem solving." Besides confirming Luria's frontal lobes' location of "higher thinking" and the long-recognized speech centers, Ingvar also found that the blood flow did not necessarily correlate with performance but rather "to degree of **motivation** manifested, or experienced by the subject." Thus an affective component was discovered which Ingvar called "a general arousal" related to the motivation, or perhaps "emotion" of the subject. In addition, he found that the **left** hemisphere was "especially involved" during "abstract thinking, memorizing, and problem solving." In an experiment using the same radioisotope technique, Carmon, Lavy, Gordon, and Portnoy found that "listening to music passages was accompanied by an increase of rCBF in each hemisphere but much more evident in the **right**."
In the same year (1975), Bogen published "Some Educational Aspects of Hemispheric Specialization," in which he suggested that our Western civilization, in its preoccupation with science, technology, and commerce, has concerned itself with an intensive concentration on left-hemisphere functioning, ignoring essentially the intuitive, holistic, spatial, imaginative side of the brain. Our mainstream culture has achieved an educational imbalance: "the entire student body is being educated lopsidedly."

> "... it was also too dangerous to use on normal human subjects."

Hopi Indians and Blacks compared to Whites, and rural Whites and nonwhites compared to urbans, however, showed a greater tendency for right brain modes of thought, according to Warren D. TenHouten's research. He found that right hemispheric dominance correlated with lower social class and economic position and that proficiency in verbal, analytic, and left hemispheric processes in general may correlate highly and positively with upper socioeconomic status in industrial societies.

Wittrock in 1978 stressed the dangers of using terms like "cerebral dominance," because, depending upon the type of problem or the appropriate strategy, either hemisphere may dominate the processing, or both of them may be involved in it. Repetition and reinforcement, he claims, may bore the student or even turn him off. Programmed instruction may be the worst culprit: "**the organized multivariate reality constructed by the brain is far more sophisticated than the one some recent simplistic instructional materials were designed to accommodate**."

In a study of Naval recruits, Biersner found that race and laterality were the most useful measures in determining whether a recruit should be in either the remedial or non-remedial group and whether reading comprehension achievement could be expected among remedials. While the minority recruits were less profound and could be accommodated by removing obstacles such as "inappropriate vocabulary development" or "poor social adjustment." Thus, we see that cultural-development factors play a potential role in the relationship of hemispheric preference and cognition. Such factors would have to include socioeconomic status, ethnicity, English as a second language, and sex. Of these, only ethnicity was considered in the Biersner study.

The investigation I conducted for my dissertation included these factors as variables to be considered in a design which used four cerebral measures--a verbal dichotic listening test, a visual imagery test, a part-whole completion or haptic test, and the torque test. These tests were conducted on 20 remedial and 20 nonremedial normal hearing, right-handed adult community college students to ascertain whether hemispheric preference and the variables of reading level, English as a second language, remediation grouping, age, sex, and ethnicity were related.

My choice of measures was a difficult choice. Most of the available tests are too expensive, too risky, or not convincingly culture-free measures. I could not, for example, replicate the most impressive method, that of the radioiosotope technique: it was not only too expensive to acquire the training and equipment; it was also too dangerous for use on normal human subjects. The same was true of the sodium amytal injection technique, the split-brain surgery method, and the PET or CAT scan. The MEG (magnetoencephalogram) had not yet been refined.

Probably due to their relative availability and uncomplicated usage, dichotic listening devices have proved to be extensively used by many researchers. The dichotic listening technique enables researchers to determine ear superiority by simultaneously presenting a spoken digit or sound to one ear and another sound to the opposite ear through earphones which are connected to a stereo tape player. Since the ears are cross-wired to the hemispheres, the sounds heard by the right ear, for example, are perceived in the left hemisphere. Such a perception is called a right ear advantage, or REA. One of its drawbacks, however, is that while the technique does measure speech perception, it does not make any claims about measuring whether a person's mental strategies are predominantly abstract, categorical, analytical, propositional, or any other "left" hemispheric mode. In light of this, it seemed imperative to combine the dichotic listening test with other measures rather than to rely on it alone for data to support or refute research hypotheses concerning hemispheric differences in adult learners.

The other measures selected purported to measure (albeit, externally) the asymmetrical functioning of the cerebral hemispheres. Although each possessed its own particular drawback, together they gave a reasonable external measure. The Nebes Haptic Test involves the closure factor (the superiority of perceiving part-whole relations) of the right hemisphere. The subject selects, first with the right hand, and then with the left, from among three different sizes of complete circles the one from which a given arc might fit. Unable to see the arc behind a screen, the subject nevertheless can feel it as he examines it with his hand, and he can examine the circle in front of the screen with his eyes. Touch perception is central to this experiment.

The Coltheart visual imagery task required the subjects to mentally scan the alphabet from A to Z, counting the number of letters which contained a curve in their upper-case form. The drawback of this test as a measure of spatial ability, or a right hemisphere superiority measure, lies in the fact that letters of an alphabet by their very nature are linguistic stimuli, and visual scanning by its function plays a role in reading, a process assumed to require left hemisphere activity. The counting aspect of this task, moreover, appears to require sequential functioning of the left hemisphere. Nevertheless, the researchers who developed this measure believed it was purely visual because "no information about the sounds constituting the name of the letter could assist in deciding whether the printed form of the letter contained a curve."

> Counsellors should also have a strong sensitivity for hemispheric preference . . .

The simplicity and speed of the torque test developed by Blau made it an attractive candidate for one of the measures in the dissertation research. Blau had hypothesized that individuals who tend to draw circles in a clockwise direction (torque) during the developmental years demonstrate a neural integrative confusion of mixed cerebral dominance which interferes with the acquisition of cognitive, language, and social skills. He also believed that these individuals were more vulnerable to schizophrenia. To determine a person's propensity to circle in a torque direction, Blau devised a simple three task test, in order to observe which direction an individual drew circles around X's.

Thus these four tasks were selected for measuring hemispheric preference so that the hypotheses might be tested. Taken together, the results supported the conclusion that hemispheric specialization can be important to the design of educational programs, particulary remedial programs. The data suggested a strong basic differentiation between remedial and nonremedial students. There were, in fact, **no** left preferences among students in the lower reading levels, but there were three students in the sample who read at

the fifteenth grade level or above who showed by their performances on the measures that they had a **right** hemispheric tendency. Thus, an individual with a right hemispheric preference cannot necessarily be predicted to be in a slow reading group. Rather, the data indicate that poor readers will most likely not show a **left** preference. They were either right-hemispheric preferenced or "undifferentiated" in that they showed no preference at all. The tragedy in this instance is that without either of the hemispheric strengths to build on, even right-hemispheric stimulation and treatments may be of little help, due no doubt to brain growth and malnutrition.

Right Hemisphere Stimulation

In those individuals where a hemispheric tendency, either left or right, is evident, certain activities will be useful in stimulating learning. Left-preferenced employees need to break out of their narrow linear thinking. Right-preferenced trainees need to be motivated to learn job skills which may require some left-brain ability. In order to motivate them, multisensory instruction, aesthetic interventions, guided imagery, and hands-on experience will most likely succeed. Such applications in a vocational or training and development context can be organized into three major areas for use in policy and program planning: instructional and curriculum implications; support and student services; and institutional support.

> ... the effective conceptualizer and whole person must see both right and left hemispheres.

Instructional and Curriculum Implications

For hemispheric specialization findings to have the greatest impact on training and development, certain initial thrusts would have to be supported by top-level administration and management. All aspects of the instructional area should be considered: general academic, occupational/vocational, community education, and, of course, basic skill development and remediation. Team teaching with local artists should not be ruled out in any of these categories. We now know that programs stressing aesthetic interventions result in positive improvement in academic and cognitive skill areas as well as in self-concept enhancement. With reduction in funding it will become more imperative to hire professsional staff with dual talents. Specifically, prospective faculty with art or dance backgrounds or guided imagery experience would make excellent choices as additions or replacement of personnel. If these individuals also had experience in teaching unrelated subject matter or in evaluating programs or in curriculum design, the cost-effectiveness is clear.

A key question in this regard is "**How do we design the curriculum to promote better curriculum/hemispheric preference matches in existing curricula?**" A curriculum biased toward "left-brained" courses would be considered inadequate under this new thrust. An Adult Basic Education project narrowly restricted to reading, writing, and arithmetic would educate mainly the left hemisphere, if it achieved even that much. For educational neglect of right hemispheric curricula in existing programs may account, at least in part, for the lack of student success and the rising attrition rates.

Support and Student Services

An important aspect to consider under this rubric is the library. Its resources should be evaluated in terms of multisensory materials to see if they are adequate to meet the needs of all programs. Related to library resources are museum and audio-visual resources. Can a "sensorium" be planned by a community group to be used by all of the citizens, but especially by students in need of remediation? Are staff members trained in the use of multi-media techniques? An institution's media resource center must be evaluated and appropriately expanded to accommodate diverse hemispheric strengths.

The policy implications of hemispheric specialization research in the area of student services are rather subtle. Management in charge of recruitment and orientation should be aware of the special attraction brochures, materials, and methods of advertising would have if planned with right-hemispheric traits in mind. The more visual, the more concrete -- indeed, the more aesthetic (in the widest sense of the word, including auditory aesthetics) -- the product is, the more motivation the item is likely to elicit from right-preferenced individuals.

Other staff members of support services need to be apprised of particularly stimulating approaches that would attract--and keep--the more right-hemisphere preferenced student. The coordinator in charge of cultural affairs and intramural activities is one example. Counsellors should also have a strong sensitivity for hemispheric preference, especially in academic and career counseling.

Institutional Support

Policies of advocacy by top management will be essential in order for procedures to be instituted which facilitate the processing systems of the brain for the benefit of students. Before too long it is expected that government programs will reflect policy derived from the current and emerging brain research findings. No matter the impetus, commitment and support from the top will be the enabling catalyst for initiating a new "brain compatible approach" to learning.

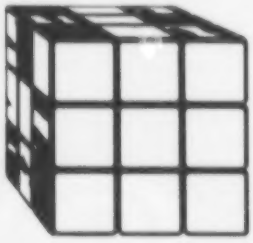
To achieve a successful ambience, managers will have to be willing to promote in-service education and staff development programs introducing right-brain aesthetic, sensory, and imaginal practices in all segments of the institution from the lab to the counselor's office. Guided imagery techniques, mnemonics, and problem-solving using mental rotation or visualization methods will undoubtedly be some of the techniques used. A resident neuroscientist in charge of coordinating these new thrusts will become the norm no doubt before the end of this century. In cases where an institution cannot hire such a specialist on a full-time basis, the emergence of a consultant activity will probably become common place.

Conclusion

The implications of hemisphericity as a newly recognized phenomenon in the educational setting, then, suggest fundamental change in several areas. One of the potential pitfalls, however, may be a serious misunderstanding of these implications. Tracking students into so-called "left-brained" classes or "right-brained" programs would be the outcome of such a misunderstanding. The rebound effect of overcompensating for past emphasis on left-brained skills may augur an unhealthy lop-sided approach in the other direction. We need policies that incorporate the axiom that the effective conceptualizer and "whole" person must see both right **and** left hemispheres.

Otherwise, if you happen to be a trainer in the petroleum industry, for example, and you have trouble teaching employees how to read large-volume gas measuring devices and you go overboard with right brain methods, you may find that your trainees get hooked on the trail of the "gas rainbow". Or perhaps you are training tool pushers to service pumping units or to maintain highly specialized **and** expensive equipment in enhanced oil recovery projects. If you don't emphasize **both** right and left hemisphere talents, you may regret the chaos resulting! For, as Bogen and Wittrock have warned, **"it's a big mistake to teach only by imagery...and people who preach a strict three Rs back-to-basics approach are mistaken too--they aren't wrong; they're just half-right!"**

Strive then for a balanced approach including both the basics of the left hemisphere domain as well as the more holistic and aesthetic attributes of the right hemisphere. Through such a balance, we will come closer to achieving the mission of helping students and trainees not only to learn how to make a living but also how to live. □



APPENDIX

For those who wish to begin on their own to explore techniques which build on the theory of hemispheric specialization, the following titles will be instructive. They can be studied for ideas which incorporate "right-brain" methodologies and techniques in instruction as well as counselling.

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CLIVE PADFIELD

Tomorrow's Recreation and Leisure

While preparing for today I found that all three aspects of my topic have a disturbing variety of definitions.

For example, while Neulinger (1974) proclaimed that leisure has "**one and only one essential criterion, and that is the condition of perceived freedom**" (p. 15). Other experts have suggested that leisure is variously "consumption time", "economically free time", "non-working time", "unobligated time" or even, more simplistically, "the opposite of work". From the variety of the preceding definitions, one may correctly assume that there is no universally accepted definition of leisure. Recreation also suffers from an overabundance of definitions. Although it has been generally accepted that recreation occurs during leisure time, lately even this assumption has been challenged.

Finally, among adult educators, we find that there is much disagreement concerning what activities may, or may not be considered educational. While Tough (1979) has suggested that almost anything an adult does, from attending classes to reading a book, may be viewed as a learning project, other adult educators are not so all inclusive in their definition.

Therefore, I realized it was important that I clearly articulate my definitions of leisure, recreation and adult education. Thus I struggled over a cold beer to find satisfactory defintions. Eventually I decided that,for me, leisure is the time available to an individual exclusive of work and other obligations. In other words, it is the time in which an individual may freely choose what he or she will do.

In defining recreation I found most experts of little help, since they assumed that recreation took place during leisure time, maintaining that, "recreation is an enjoyable leisure time experience", or that it is, "a leisure time activity motivated by pleasure". Although Kraus (1966) criticised the previous definitions because they "give no thought beyond immediate pleasure" even he continued to maintain that recreation was "carried on in leisure time". However, if one examines the literal definition of recreation it means to "create anew, restore or refresh", and while such an experience often occurs during leisure time, and organized recreation obviously does, I have frequently been refreshed and restored by my work as I am sure many of you have. In fact, on Mondays I often recover, at work, from my weekend overdose of leisure.

Finally, I found a definition of recreation with which I could agree. David Grey and Seymour Greben (1974) in their fascinating article entitled **Future Perspectives**, suggested that,

Recreation is not a specific event, point in time, or a place in space, it is a dimension in life a state of being.--- recreation is feeling good about yourself. It is a peak experience in self-satisfaction -- and emotional condition within an individual human being that flows from a feeling of well-being and self-satisfaction. --- It is independent of activity, leisure or social acceptance. [p. 49]

Thus, by using this definition, recreation may occur at any time and in any place during periods of work or non-work, it is **not** limited **solely** to leisure time. Nevertheless, while agreeing with this concept I would suggest that for most people the **vast majority** of their recreative experiences do occur during their leisure time. This is particularly true of those recreative experiences or activities which are provided by public agencies or private organizations. During this talk, I shall be concentrating a great deal on such organizations, agencies and the professionals who work in them. Therefore I shall be concentrating on recreative experience which occur during leisure time.

While I agree with Dr. Allen Tough that adult learning comprises any "deliberate effort to gain and retain

certain definite knowledge or skill, or to change in some way" and that this may occur in any setting, at this time I intend to concentrate on adult learning environments which include the presence of a helper or facilitator. Therefore, I shall be referring mainly to institutional or organized learning involving someone who, in K. Patricia Cross's words practices "the art and science of helping adults to learn". In other words, adult education which usually takes place in such settings as universities, community colleges, vocational centers and/or community schools or centers. I intend to focus on the inter-relationship of recreation, leisure and adult education and specifically upon how this inter-relationship may effect you and your work in the future.

During the course of this conference you have been exposed to numerous world famous futurists such as Marilyn Ferguson and Frank Feather. They have, I am sure, presented their interpretations of current trends and the probable impact of these trends upon the future. You have agreed with some of what they have said, you have also, assuredly, disagreed with other points they have made. With other interpretations you most likely feel that you need more time to consider before making a judgement. This is so for all of us, because, in reality, whether consciously or unconsciously, we all have our own view of what the future will be.

Like all of you I also have a view of what the future will be, an underlying future philosophy if you will. And, while I may tell you that, in "think tank terms", I have carefully prepared a "scenario" for the future and that this "scenario" is my interpretation of the available data and their possible impact upon the future of our professions, in reality my interpretation, and, my selection of the data I choose to examine, is limited and directed by my "future philosophy or value systems". For, as Toffler (1980) has asserted, no social forecast is "value free or scientific, no matter how much computerized data is used" (p. 5). Therefore, I must accept the reality that other scenarios and other interpretations are possible (Even though they will be wrong!!!)

Furthermore, in spite of what Vernon O. Marquez claimed in his article entitled **Management and the Reverberation Syndrome** that,
--we can only be sure of two things about the future. The first is that it will not be like the past or present. The second is that it will not be like what we think its going to be like.
we must actively plan for the future in order to be prepared for it and not project a laissez-faire or resigned attitude toward it. If we are going to plan, however, we should be clear about what our personal "future philosophy" is. Seymore Gold (1977) has suggested that views of the future may be divided into four major categories. Perhaps you would think about your predominant future view, as I describe Gold's categories.

The Conservative View

This view is based on straight-line or linear thinking. It is what Toffler (1980) has referred to as "more-of-the-same" or "an enlarged cinerama version of the present". In other words the future will be like the past only more-so. Income will increase, the work week will decline and the work ethic will prevail. For such a future we need do nothing except perhaps beef-up our programs to meet the needs of an increased population. This view is popular since, "**most people - to the extent that they bother to think at all about the future - assume the world they know will last indefinitely**" (Toffler, 1980, p. 11).

The Humanistic View

This philosophy predicts a change in our view of work and leisure. The distinction between the two will disappear, work will become people oriented, wealth will be distributed fairly and the leisure ethic will become the dominant ethic within our society. This view is, I believe, basically utopian and fails to take a global view of the future. In fact I would go so far as to suggest that it is predominantly a theoretical Utopia.

Pessimistic View

This idea sees the future as being one of scarcity and turmoil in which, according to Toffler (1980), "**society is inevitably destined to self-destruct within our life-time**" (p. 12). This philosophy has great appeal, and has had for a number of years. For example as far back as 800 B.C. the Greek Philosopher, Hesiod stated that he saw "**no hope for the future of our people if they are dependent on the frivolous youth of today**". Almost 2000 years later, in 1954, Harrison Brown in his thought provoking book **The Challenge of Man's Future** wrote that:
Whether or not it [machine civilization] survives, depends upon whether or not man is able to recognize the problems that have been created, anticipate the problems that will confront him in the future, and devise solutions that can be embraced by society as a whole----. In the light of what we know of the nature of man, it would appear that the possibility of solution are remote [p. 81].
Even closer to the present day, the Club of Rome has stated that "**the world is in worse shape now than it was ten years ago -- and is getting worse**" (Peccei, A., 1980).

The pessimistic view is extremely seductive to a certain segment of our society, and receives a great deal of publicity in the media. Doom and gloom are extremely newsworthy!

Optimistic View

Sees the future as producing new attitudes towards work and life style. This view would concur with many of Toffler's predictions in his book **The Third Wave**, specifically that "**we are the final generation of an old civilization and the first generation of a new one---**" (p. 12). The optimistic view suggests that the world will survive but that radical changes will be necessary. In fact, the optimistic view often suggests that the necessary changes will be forced upon us by such realities as computer technology, alternate energy sources and new social structures e.g. changes in family groupings caused by changes in the status of women.

Personally, I believe that we are living through a turning point in the history of mankind, it may in fact be Toffler's third wave! While we, as a species, have lived through many such turning points in the past, this one is, I would maintain, unique because of three factors which Starrs (1976) has defined so well, namely that:

1. **We face the possibility of exhausting many of our non-renewable resources.**
2. **Our problems are converging where the solutions for one aggravates another.**
3. **The termination of life on our planet is within our grasp. [p. 127]**

> . . . more people are using . . .
> leisure time
> to take part in an
> adult education experience.

With what I term my "normal schizophrenic" view of the future I would categorize myself as an "optimistic-pessimist". I am optimistic to the extent that I have a 15 month old daughter who no accident. I believe that she and her generation will successfully live through Toffler's third wave, or whatever wave we are riding, if only given half a chance by we "old folks". However, I am a pessimist to the extent that I recognize the very real and increasing possibility of a nuclear holocaust, brought about by what generals and politicians so euphemistically term "a limited nuclear response".

Nevertheless, on days like today, my optimistic personality takes over, therefore you may accept the following as my optimistic scenario of the future trends in leisure and recreation and their possible impact upon adult education; or more realistically upon adult educators, namely you. Before presenting my scenario, however, I must clarify one more point. When discussing "the future" we should always define what we mean, since, legitimately, the future may be tonight, tomorrow, next year, or 20 or even 100 years from now. I would suggest that given the rapidity of change in our world, anyone who engages in long range future predictions, of say 50 to 100 years, is engaged in wishful speculation. Therefore, I intend to limit my scenario to 18 years of the year 2000. Even attempting an 18 year scenario is probably extremely fool-hardy if one considers the fact that most organizations today cannot successfully plan for five years! However, since few will remember beyond next week what I have said, and certainly nobody will be foolish enough to act upon what I say, I will forge ahead.

According to James Murphy (1974) "**leisure serves three essential functions, relaxation, entertainment, and personal development**". It is worth noting that we could easily substitute "adult education" for "leisure" in the preceding quotation, which would then read, "**adult education serves three essential functions, relaxation, entertainment, and personal development**". In fact, I believe that in the future, we shall find adult education and leisure becoming more and more synonomous.

Most prognosticators suggest working time will continue to decrease for the majority of people. In fact, by the year 2000, according to a Government of Ontario Task Force, most Canadians will be working twenty to fifty percent less time than at present. Thus, for most people, discretionary time, or the time available for relaxation, entertainment, personal development or in which to take a second job, will increase significantly during the next eighteen years. Of particular importance to the adult-educator is the fact that many of those experiencing this increase in their potential leisure time, will be relatively well educated, having completed at least a high school education. Many of you may question whether a high school education constitutes a "relatively high level of education" but is is when compared to previous generations. Thus, because of their relatively high level of education individuals will be more likely to seek further educational experiences rather than the more traditional recreational pursuits during their leisure time. In fact, many will seek to acquire skills which will assist them in coping with their increased leisure time.

Education during ones adult years will become increasingly necessary since no amount of education during ones youth will prepare any adult to meet the demands that the future will place upon them. In fact, as Knowles (1975) has stated "**the education of the adult is rapidly becoming a central concern and need of our civilization**". According to Dumazedier (1974) adult education should play an even more important role, since he contends that it should "**help the whole population remain capable of playing a part in the cultural development of society**" (p. 177). Rather a tall order for the adult educator of the future.

Actually, as many of you are aware, the projected increase in adult education is already underway, for, as a recent **Royal Bank Newsletter** (April 1979) has stated: **Adults in Canada are returning to a life of learning in massive numbers---. A mass return to learning is underway, the dimensions of which are difficult to measure. It is known that adults make up the fastest growing segment of educational enrollments in North America and will probably continue to do so for a long time to come in an era when classrooms are being emptied by low birth rates [p. 1].**

When one considers that most adult learning takes place during leisure time it it obvious that more people are using more of their available leisure time to take part in an adult education experience. They are also turning most frequently to recognized educational institutions e.g. universities, community college etc. for their leisure time activities rather than to the more traditional recreation departments. In fact, I would suggest that educational institutions and recreation departments will be competing more directly for the adult's finite leisure time in the future. I believe, that unless areas of responsibility are clearly delineated we shall see publically funded institutions, namely recreation departments, universities, and colleges as well as private entrepreneurs, offering similar programs and competing for the same clients. While such competition may improve the overall quality of available programs for adults, it may also encourage much which is undesirable, such as substandard instruction and an emphasis on fad and short term gain.

Institutions providing adult education and recreation departments will be under greater pressure to provide more programs specifically for certain groups such as singles, childless couples, the unemployed, and the elderly. Each of these groups it is predicted will increase in relative size during the next two decades. For example, by the year 2000, according to a recent Woods Gordon Survey (Arpil 1980) 12 percent of the Canadian population will be over 65 years of age. In fact, Canada has been considered an "old" nation by the United Nations since 1971. In the next eighteen years, older people will increase by one million while young people will decrease by a quarter of a million. This increase in the number of older people will necessitate a change in many of our values and attitudes concerning aging and the aged. Indeed, it will, I believe have a profound effect on adult education and its priority as a leisure time activity. Government spending priorities will obviously have to change with the possibility of proportionately **more** resources being directed to adult education, and proportionately **less** to the education of children and youth.

Furthermore, the elderly of the future will, I suspect, become more militant as their relative political power increases, and thus, will not be satisfied with the uninspired time filling activities which many recreation programs have subjected them to in the past. More and more elderly persons are seeking out educational experiences which are not merely time filling. For example, according to the **New York Times**

One of the brightest ideas in years is being put into effect at the Fromm Institute for Lifelong Learning at the University of San Francisco, where retired people are being taught by retired professors, making good use of both sides of the wisdom that comes with age. [From: Royal Bank Newsletter, April, 1979, p. 2]

My own institution, the University of Alberta, has, for the past eight years run a Spring Session for Seniors which is always quickly filled. The three week session offers the students a choice of nineteen different courses ranging from music appreciation to a research seminar. Furthermore, increasing numbers of older adults are enrolling in regular programs at educational institutions because they are no longer accepting the conventional wisdom that "you can't teach an old dog new tricks". In fact, increasing numbers of elderly people are proving that "old dogs can learn very complicated and advanced tricks", given the right environment.

> 6 ... for many their career becomes a central life focus. 9

Another special group which will become increasingly important is that of the single adult. Surveys in both the United States and Canada have shown a remarkable rise in the number of adults living alone in our society. For example, in 1980, 1 in 5 or 20% of all households in the United States were single person households, and the

number is rising. Many singles are very successful and they live alone by choice not through necessity. Thus, for many their career becomes a central life focus. Because of this, they eagerly seek out upgrading opportunities for their career, many such opportunities are, or should be, offered by adult educators. Furthermore, for the single person, the opportunity to meet other people of similar interests and status is an added attraction which both adult education classes and organized public and private recreation activities

> "... within a decade ... tens of millions will be unemployed, on public welfare or on public work programs."

provide. In fact, some adult educational institutions and recreation agencies are already offering such classes as "how to meet people", "how to be liked" or "how to anything!" Personally, I am not completely happy with such classes, since many of them merely technologize or teach a technique which is often manipulative rather than authentic. I feel that many of those leading such classes could more honestly describe what they are doing by employing a recent **University of Alberta Gateway** caption namely, "**learn to be sincere, even if you have to fake it!**" However, apparently increasing numbers, of predominantly middle-class North Americans **feel** they **need** such help, whether they do or not, and who am I to argue with their perceived needs.

Couples who are consciously choosing to remain "childless" are, in many ways, a very similar group to the singles. Firstly, the number of childless couples is growing and will, according to all indications, continue to grow. Secondly, many of those choosing not to have children, are relatively well educated **and** intelligent. Thirdly, because of their childless state, and the fact that both partners are usually working, they have more disposable income and often, potentially, more leisure time. Such individuals are able to attend adult education programs in the evening and on weekends because they don't have children.

Furthermore, these young, independent and well educated adults are demanding more adult oriented programs from community leagues, recreation departments and educational institutions. Since both singles and childless couples are increasing in number, we can expect more, not less demand from these groups in the future. Which institutions or organizations receive their patronage will depend largely on how responsive those organizations are to the perceived needs of these groups. I would suggest that because both singles and childless couples usually have higher than average disposable incomes they will become prime targets for private sector entrepreneurs in both adult education and organized recreation. Furthermore, since such groups, will make up a significant segment of the tax paying public those of us in publically funded institutions and/or organizations must ensure that we are, at least to some extent, serving their needs as well as, if not better than the private sector. For, if we do not, we will assuredly, in the not too distant future, find ourselves facing a taxpayers revolt led by a group of young, well-educated, independent adults who have enough money and enough time to organize a most successful, and for us, a possibly uncomfortable campaign.

This scenario will be avoided if we encourage such groups to engage in participative planning with us, concerning our offerings and programs. For, if as Grey and Greben (1974) have suggested, "**we are moving toward greater citizen involvement in community affairs and local government**" (p. 52) we should not expect to remain untouched by this desire for involvement. The fact that citizens are beginning to demand a significant and meaningful role in planning and decision making should be most gratifying to the adult educator -- perhaps self-directed learning is at least paying dividends, or possibly, heaven forbid, it is occuring in spite of us. However, since we as adult educators have practiced and encouraged self-directed learning with our students, we will naturally be better equipped, and prepared to encourage and initiate participative planning with our client groups than will other public agencies which are, and will be, servicing some of the leisure time needs of adults in our society.

Another segment of society which will have a significant impact on adult education in the future are women. Many organized recreation programs have catered to the leisure needs of women, particularly married women, within our society. However, I believe that as increasing numbers of married or recently separated or divorced women return or desire to return to the work-force, their leisure habits will change. Many will seek out retraining programs to ease the transition from home to the work-place. Such retraining programs, will, in many instances be offered by educational institutions. Thus, it is probable that the trend of women making up an increasing proportion of our post-secondary students will continue and possibly strengthen. The trend toward them demanding access to traditionally non-female training programs our educationally opportunities will also continue. I sincerely hope that my daughter will not be denied entry or discouraged from entering any program solely because she is a female. Naturally such demands will, for a short time, cause problems in terms

of acceptance and resistance but, in the same way that we appear to have accepted female bus-drivers and pilots, so we will increasingly accept women in other non-traditional roles.

Over the short term I suspect that organized recreation programs will lose female clients to educational institutions as they re-direct their energies and spend their limited discretionary time in preparation for a career rather than in traditional recreational activities. I suggest this because, as Zuzanek has stated,
Multi-national surveys confirm the uneven distribution of leisure between men and women with the situation of women being a highly unfavorable one. [p. 44]
Therefore, working women or women with children having limited leisure time will, in most instances, be unable to participate in both organized recreation **and** educational pursuits.
According to a recent W-5 program on C.B.C. there are over one million Canadians out of work, with the prospect of more to come. Whether massive unemployment is a temporary phenomenon, as we are assured by our politicians it will be, or, whether Robert Theobald's prediction made in 1975 is correct, namely that:
--within a decade we can expect that tens of millions [in the United States] will be either unemployed, on public welfare or on public work programs.
(Quoted in Kaplan, 1975 p. 284)
is problematic at this time. What is certain is that the adult education system in this country will, in all probability, be faced with the task of retraining literally thousands of Canadians in the short, if not the long term. If Theobald is correct then both adult educators and professionals in the field of recruitment will be faced with an even more difficult task, that of giving the unemployed and/or underemployed the skills with which to enjoy, or at least tolerate with a minimum of mental stress, their enforced leisure. This task will be difficult in the extreme for, as Kerr (1962) has indicated:
In a contrary and perhaps rather cruel way, the twentieth century has relieved us of labor without, at the same time, relieving us of the conviction that only labor is meaningful. [p. 40]
Our societal values have, in fact, made being unemployed a very painful and stressful existence. Retraining, "up-grading", job hunting and interview skills will all be in greater demand in the future than they are today, as a more "educated" and/or "skilled" work force is required. The fact that increasing numbers of Canadians may spend a greater proportion of their discretionary time in qualifying themselves for the ever changing job market, will have a significant effect on both public education and public recreation by, possibly, increasing the demands on the former and decreasing the demands made on the later.

A trend which I believe will have a significant effect on both education and public or private recreation is the increasing emphasis on fitness and health. Canadians are becoming more aware of, and interested in, their bodies and how they work. People are attempting to maintain their health through correct nutrition and exercise. Furthermore, as a nation we are beginning to appreciate the fact that health is more than just the absence of disease, for as the World Health Organization has stated, health is "**a state of complete physical, mental and social well-being and not merely the absence of disease**". Thus, if we, as a nation, are to reach such a condition we shall need the active participation of our educational institutions and public recreation departments so that people will really appreciate what true health means **and** requires. People must be educated to understand that, for example, half an hour on an exercise bike which has no tension on it at all, as one of my graduate students saw recently in a local health spa, is of little or no use physically. At present there appears to be an over-abundance of exercise opportunities and a distinct lack of fitness/health

> Our duty is to provide learning opportunities on these disparate issues

education available to adults. Unless adult educators and professional recreators provide programs which inform adults what is really involved in working towards physical fitness we as professionals, will be guilty of leaving Canadian adults unprepared to intelligently question the claims and programs offered to them in the name of physical fitness.

Health does not, of course, comprise of the physical -- mental health is equally important. For an ever increasing number of adults, the arts and cultural activities provide an outlet for rejuvenation and creativity. The arts and crafts are, no longer, a genteel activity for old ladies. A 1979 survey conducted by the Secretary of State indicated that "**almost 60% of Canadians are involved in arts activities of some kind such as acting, painting or playing an instrument**". (Canadian Conference of the Arts, 1980, p. 13). Furthermore, most prognosticators are suggesting that participation in creative activities will undoubtedly increase in the future. Interestingly it has been suggested by some writers, that "local colleges will assume a dominant role in providing arts and culture for

adults''. At present, in most municipalities, Recreation Departments are officially responsible for the provision of arts and cultural programs. However, since many such departments often show a distinct lack of interest and/or leadership, I would suggest that local colleges may, in fact, assume a dominant role, which will undoubtedly provide the colleges with a growing number of adult students, and will, hopefully in return provide the community with first-class instruction in the arts.

Increasingly many adults are attempting to become self-sufficient in general household repairs, car maintenance and other such skills. In Britain this trend is termed DIY or the ''do it yourself'' revolution. One of the major reasons for this revolution, apart from ever increasing costs, shoddy workmanship and the difficulty of getting a carpenter or plumber, is that leisure time is expanding. Woods Gordon (1980) have predicted that ''Do it yourself'' will continue to grow to the extent that it will ''**create important new markets and may slow the growth of spending on services**''. (p. 19) If, as is predicted, DIY continues to grow, more and more adults will be seeking courses which give them at least the basic skills in home and car maintenance etc. Moreover, as leisure time increases the demand for more advanced courses will probably grow.

Although much of my proposed scenario requires a response from educators and recreators, both professions should, I believe, be proactive as well as reactive. If discretionary time does increase then educators and recreators alike will have an opportunity to influence, through the courses they offer, what individuals actually do with their discretionary time. In my view adult education should be more than merely learning skills and techniques it should also address the problems of the world. Fabun (1971) suggested that ''**the place to start is -- education in ecology --. Somehow, being part of the ecosystem and the ecosphere has to be established**'' (p. 33). We must, in my view, ensure that more adults realize that we are not independent of nature and that we are continually increasing our demands on the planet's finite resources. Issues such as the environment, global conflict, energy use and unemployment are, according to Paul Bertleson the chief of adult education for UNESCO: **--too momentous and too urgent to be solved by our children some time in the future. Our duty is to provide learning opportunities on these disparate issues -- to help everybody learn what we all need for our collective survival.** (Quoted in Royal Bank of Canada Newsletter, April, 1979, p. 3)

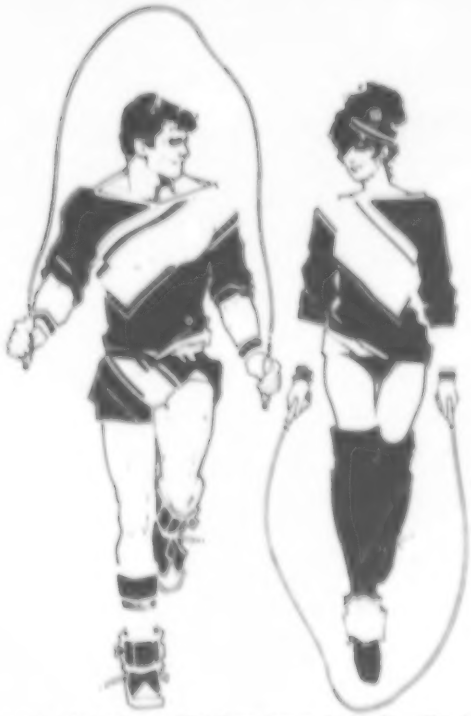
In other words, educators should ensure that adults may, if they so choose, use their leisure time constructively for both personal and public good. Since one of the major problems facing recreators is the need to ensure the availability of adequate recreational land for future generations, this is definitely an area in which recreation and education could and should work hand in hand.

I have left until almost the end any mention of computers. You are all aware, after your sessions with Dr. Szabo, Marge Kosel and representatives of various computer manufacturers and distributors, of all that computers can, and will do. To say computers will merely have an effect on leisure, recreation and adult education is to understate reality. When, as Toffler (1980) has suggested, every home has a computer, work, discretionary time and social structures will all be changed to a greater or lesser degree. For example, many of us will communicate to work rather than commute to work. By so doing we shall be less tied to a 9 - 4 routine and will thus be able to plan our leisure time to suit our individual preferences. Much learning therefore will take place outside of the classroom or centre, as will many of the activities which we associate with organized recreation.

What computers will enable us to do, and what we in fact choose to do with them, is at the moment unclear. What is certain however is that theoretically, all adults, regardless of where they live, will have access to any adult education programs. Furthermore, these programs, should be available to them at the time they choose to access them through their home computer, not solely at a time set by the individual institution or instructor. For both educators and recreators the impact of computers will be enormous. They may mean that we will work in less face to face situations than at present. On the other hand, after the initial glow has worn off, we may find that demands for face to face involvement increase dramatically in order to escape the omnipresent computer. I would not like to make a definite prediction, however, I believe we must be prepared for both eventualities.

> . . . what effect did this program have on individuals?

Throughout this talk I have attempted to show that increasing leisure time will have a profound effect on both adult education and organized recreation. I would not claim that my proposed scenario is complete, or that I have discussed all of the significant groups and/or trends. For example, I have not discussed the physically or mentally handicapped adults and the effect that their desire for increased access to all programs will have on



our future planning. Neither have I dealt with the private sector and its potential impact on public sector programs.

I am convinced that while leisure time will increase for many, such will not be the case for the adult educator. With limited budgets and increasing demand, you may be required to work longer in order to ensure that others are able to enjoy the programs which they desire during their increased leisure time.

It is of interest to note that many writers, when discussing the future of organized recreation, are suggesting that,

The recreation program should help each individual extend his or her intellectual and emotional reach. [Grey and Greben, 1974, p. 50].

or

Recreation personnel must become skilled in the art of community development in which emphasis is continually placed upon the quality of community life. [Recreation Society of British Columbia, 1978, p. 14]

or

The new emphasis is on development of individual human capabilities to enhance the quality of life in all of its aspects and to enhance individual and social well-being. [Grey and Greben, 1974, p. 48].

When reading the above quotations one begins to agree with the statement made by Meyer, Brightbill and Sessoms (1969) that, "**the educator and recreator have comparable interests, purposes and competencies**". I would agree, and I believe, that in the future both the adult educator and professional recreator will be viewed similarly, namely, as "individuals who can help people open doors to life enrichment".

Finally, I am optimistically hopeful that, in the future, we will cease to evaluate quantitatively, for example, by asking "how many were enrolled?" and rather evaluate qualitatively by asking "what effect did this program have on individuals?" and "was the effect worthwhile?" □

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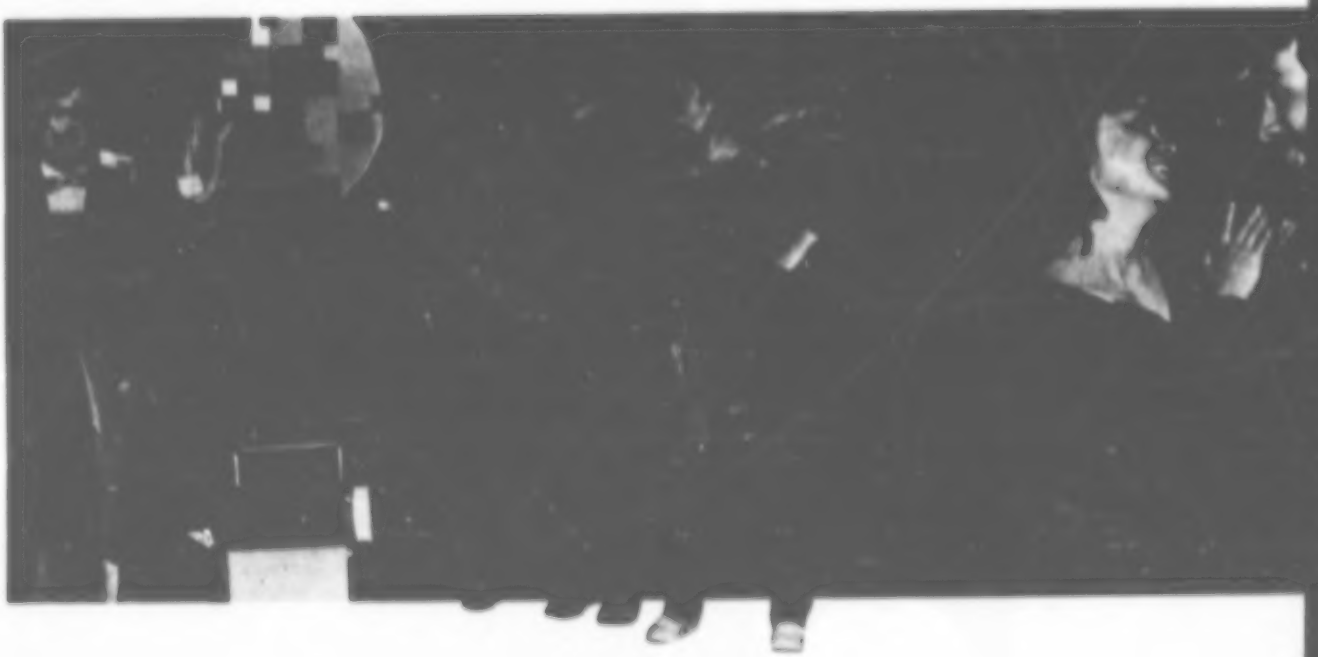

chips

FICHE & CHIPS, by Brian Paisley, was produced for Spectrum '82 by Edmonton's Chinook Touring Theatre. The concept was to create an entertainment centred around the themes of the conference which would provide a light, but thoughtful "one-for-the-road" on the final afternoon.

As Brian explains, "I looked at the future as we all hope to see it, with the computer used as a springboard to freedom, as a means of release, not of confinement. And it was wonderful - a new fulfilment... The only problem was theatre depends largely on conflict, and the problems in reaching our dreams. If the future looks that bright, why fight it? So then I thought of those uniquely human endeavours which the computer will never completely re-structure and it seemed to me that there would never be a technological advance capable of picking the winner of a horse race every time. Gambling, like any attempt to predict the future, demands a great deal of luck as well as planning and good judgement. There is a delightful element of uncertainty in the whole business, which, in a way, is what this conference is all about."

And so, FICHE & CHIPS is set at the track, the day after tomorrow. Josie, the janitor, works amid the debris of each race and bemoans the problems of garbage and a job which has little to offer... "Trouble is, there's always another race - and no matter how clean I make it, it just gets dirty again." With her are two compulsive gamblers: Fiche, who relies on his knowledge of previous races and his instincts to pick winners; and Chips, a computer buff who has devised a machine which chooses winners with "cold, hard, logical reasoning". Each of them has some luck winning a couple of races, while Josie becomes more and more intrigued by the lure of easy money and the possibility of escaping her humdrum job.

So, with all three cheering in anticipation, Synchronicity and Paradigm fight it out for first place... But they end up in a tie - for second place. A long shot, Pigpen, manages to squeak out the victory...

The final race of the day arrives and, unknown to Fiche or Chips, Josie counts her tips and bets it all on a horse she has chosen with a sure-fire method - closing her eyes and stabbing her finger at the programme... But as Fiche observes, "You know, I've got a feeling your way's just as good as mine." And so it seems, for Josie's choice, Paradigm, does very well indeed as the horses race toward the finish line. Fiche and Chips, however, have chosen another horse - and, to their delight, they find themselves with the same choice, Synchronicity... As Chips points out, "We'll both be rich! Your luck and my brain have both come up with the same winner!"

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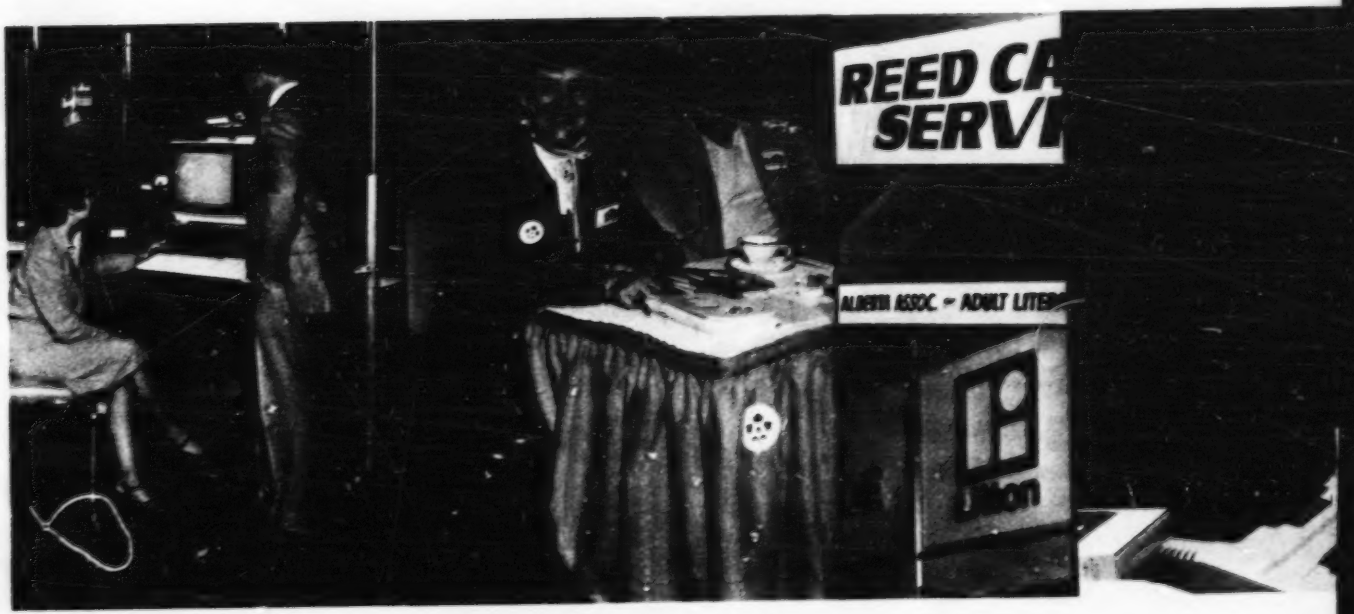
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a card of thanks

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... and to the many other persons who also helped in so many ways ...our special thanks!

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